SD 73-SH-0219

NONDESTRUCTIVE EVALUATION OF FATIGUE CRACKS

September 1973

Contract NAS9-14000

W.B.S. 1.1.7

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FOREWORD

This report presents the results and combined data analysis of two studies initiated by NASA's Johnson Space Center (JSC) as part of a continuing effort to define nondestructive evaluation sensitivities for space vehicle design. Participating in this project at the Space Division of Rockwell International were the following members of the Nondestructive Evaluation Group of Quality Engineering:

C. R. Bishop	- Program Management
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C. C. Kammerer	- Ultrasonics
J. Mamon	- Fracture Mechanics
F. J. Moskal	- Computer Programming
R. G. Poe	- Penetrant
F. H. Stuckenberg	- Eddy Current, Statistics
F. E. Sugg	- Technical Assistance

The cooperative assistance of Mr. R. T. Anderson of Convair Aerospace Division of General Dynamics, San Diego, and Mr. W. D. Rummel of Martin Marietta Aerospace, Denver, is gratefully acknowledged. The technical assistance and guidance of Mr. W. L. Castner and Mr. J. E. Maxwell are also sincerely appreciated.

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I. INTRODUCTION

The Space Shuttle orbiter fracture control plan (Reference 1) requires a product design with adequate safe-life and fail-safe provisions. The fracture control plan maintains specific constraints on the use of essential fracture-critical parts by establishing the responsibilities, criteria, and procedures for the prevention of structural failure associated with the initiation or propagation of cracks during fabrication, testing, and operational life of the vehicle. Although fracture mechanics analysis determines the maximum initial flaw size that the structural design will allow, nondestructive evaluation (NDE) of flaw detection becomes an important influence in the design analysis. This analysis requires a quantitative approach in which NDE methods accurately define the critical defects and provide statistical reliability in locating them.

To provide information relevant to nondestructive testing capabilities for fatigue crack detection, the Johnson Space Center initiated two studies, NAS9-12276 Martin Marietta Aerospace (Reference 2), and NAS9-12326 General Dynamics, Convair Aerospace Division (Reference 3). The testing was confined to 2219-T87 aluminum, which is one of the materials widely used in the Space Shuttle.

This report presents the techniques and methods used to inspect the test specimens prepared in both the preceeding studies at the Space Division of Rockwell International. Details of the specimen preparation, NDE techniques, and methods used by Martin Marietta and Convair are reported in References 2 and 3.

All specimens prepared by the two contractors were inspected by NDE personnel from Martin Marietta, Convair, and Rockwell International. A consolidated analysis of the inspection results of the two Johnson Space Center contractors and Rockwell International is also presented. The data analysis, using computerized statistical methods, establishes the flaw size detection capability of four NDE techniques—X-radiography ultrasonics, eddy current, and fluorescent penetrant—based on a consolidation of data from the three companies.

II. SPECIMEN DESCRIPTION

This study used 164 flat 2219-T87 aluminum specimens—116 of which were provided by Martin Marietta Aerospace, Denver Division, and 48 of which were provided by General Dynamics, Convair Aerospace Division. The general specimen geometry is shown in Figures 1 and 2 respectively. Tight fatigue cracks were induced on the surface of the specimens by fatigue cycling to initiate and propagate specific crack sizes from starter notches machined into the surface. After the cracks were grown to calculated sizes, the starter notches were machined off; thus, the remaining crack simulated a natural defect. The location and occurrence of the flaws were carefully selected to eliminate any pattern effect which might have been detected by the inspectors. A detailed description of the specimen preparation can be found in References 2 and 3. The total number of induced flaws is summarized in Table 1. Table 2 shows the distribution of specimens with respect to the incidence of flaws, and Table 3 shows the distribution of the flaws with respect to various flaw parameter measurement ranges.

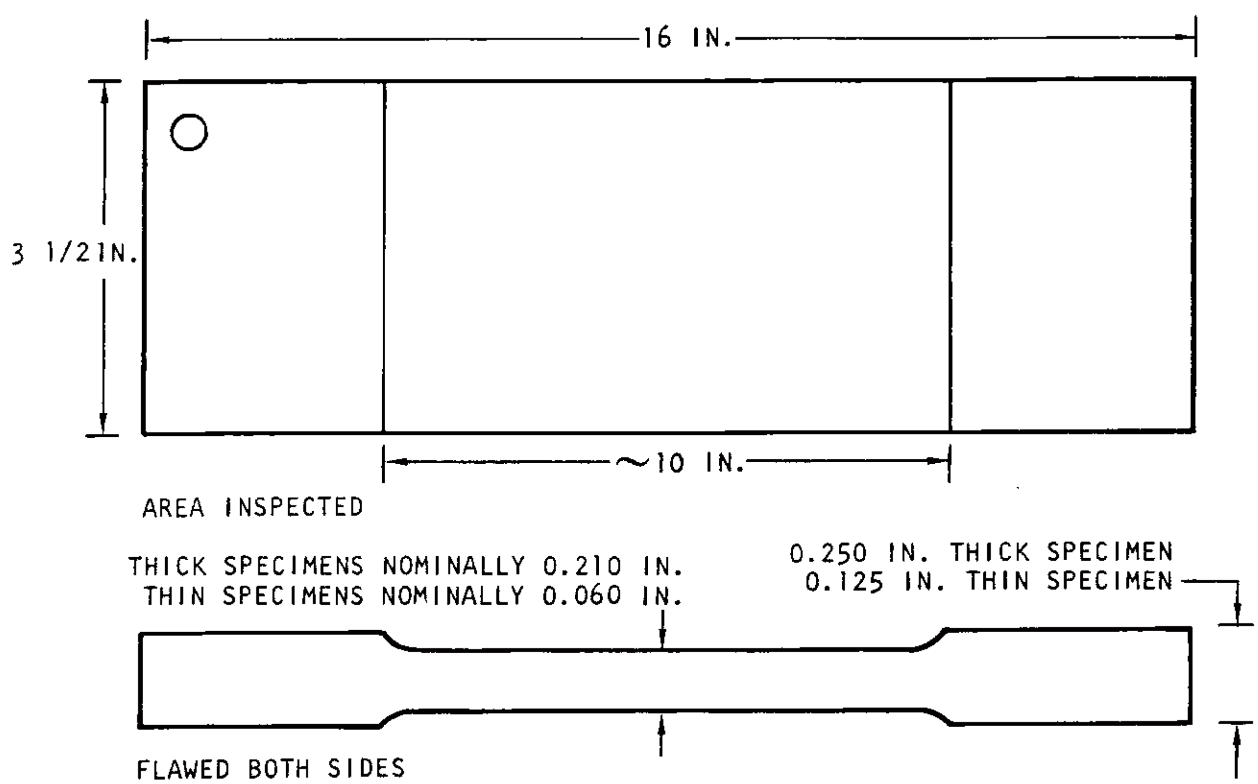

Figure 1. Martin Specimen Geometry

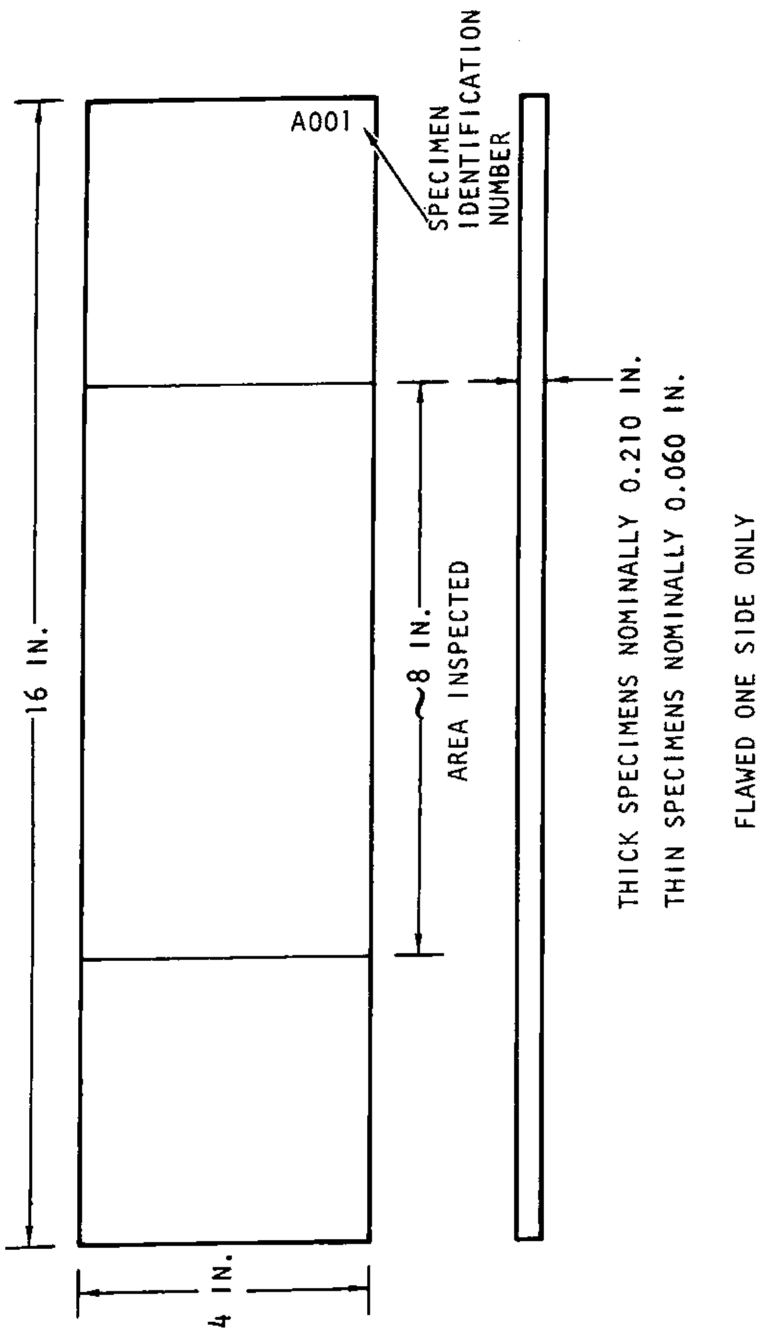

Figure 2. Convair Specimen Geometry

Table 1. Total Number of Specimens and Induced Flaws

	Size	Number of Specimens	Number of Flaws	Specimen Numbers
Convair	Thin Thick	24 24 48	57 59 116	A001 through A024 B001 through B024
Martin Marietta	Thin Thick	55 61 116	141 163 304	C001 through C055 C056 through C060, C062 through C089, C091 through C118*
Total	Thin Thick	79 85 164	198 222 420	*Specimen numbers C061 and C090 were not received from Martin Marietta

Table 2. Incidence of Flaws

Number of Flaws	Martin Marietta (flawed both sides)		Convair (flawed one side only)
	Side A	Side B	
0	22	73	8
1	22	25	10
2	34	14	6
3	23	1	8
4	8	1	10
5	1	0	6
6	6	2	0

Table 3. Flaw Distribution by Measurement Parameters

Length Range (inches)	No. of Flaws	Depth Range (inches)	No. of Flaws	a/t Range (percent)	No. of Flaws	Flaw Area (inches^2)	No. of Flaws
0 to 0.050	52	0 to 0.010	37	0-10	43	0 to 0.0010	103
0.051 to 0.100	144	0.011 to 0.020	74	11-20	85	0.0011 to 0.0020	78
0.101 to 0.150	59	0.021 to 0.030	75	21-30	102	0.0021 to 0.0030	28
0.151 to 0.200	13	0.031 to 0.040	74	31-40	47	0.0031 to 0.0040	16
0.201 to 0.250	8	0.041 to 0.050	44	41-50	50	0.0041 to 0.0050	12
0.251 to 0.300	26	0.051 to 0.060	33	51-60	62	0.0051 to 0.0060	17
0.301 to 0.350	34	0.061 to 0.070	10	61-70	19	0.0061 to 0.0070	18
0.351 to 0.400	14	0.071 to 0.080	6	71-80	10	0.0071 to 0.0080	18
0.401 to 0.450	4	0.081 to 0.090	5	81-90	2	0.0081 to 0.0100	16
0.451 to 0.500	28	0.091 to 0.100	10	91-100	0	0.0101 to 0.0150	31
0.501 to 0.549	32	0.101 to 0.110	25			0.0151 to 0.0300	18
0.550 to 0.600	3	0.111 to 0.120	16			0.0301 to 0.0400	17
>0.600	3	0.121 to 0.130	7			0.0401 to 0.0500	39
		>0.130	4			>0.0501	9

III. NDE TECHNIQUE SELECTION AND INSPECTION PROCEDURES

The NDE technique optimization of Martin Marietta and Convair is reported in References 2 and 3 respectively. NDE techniques for the inspection of the test specimens at Rockwell International's Space Division were selected by Quality Engineering personnel of the Nondestructive Evaluation Group. Although the techniques used during this evaluation program were determined by Quality Engineering personnel, the technique selection was based on product inspection equipment. Simulated realistic conditions were imposed during the Rockwell analysis to obtain data related to standard shop practice. Selection consisted of refining the existing shop practices with available equipment, rather than investigating the variables of each technique, to obtain maximum capability.

The techniques used were determined by NDE testing of five specimens. These specimens, provided by Martin Marietta and Convair, were representative of all the remaining test specimens in the program. The crack locations and intended dimensions were furnished with these specimens for use as test standards. Table 4 lists the dimensional data applicable to the test standards.

Each inspector used the specific technique prescribed for each inspection operation and performed his inspections independently, without discussion or knowledge of prior inspections. The inspection results were recorded on data sheets and encoded into computer language for processing and analysis. An index-gridded transparent overlay, as shown in Figure 3, was used to identify each detected flaw to an X-Y coordinate location, which was then recorded. The slight difference in size between the Martin Marietta and Convair specimens required a separate overlay for each. Since the Martin Marietta specimens had flaws on both sides, a separate overlay was provided for each side. The control correlation was the hole in one corner. Each inspector listed the dimension of each detected flaw in addition to its location.

X-RADIOGRAPHY

Technique Selection

To establish the radiographic technique, it was necessary to evaluate the effects of several technique variables, both individually and collectively.

Table 4. Reference Standard Specimens Used for Nondestructive Technique Selection

Specimen Number	Actual Specimen Thickness (inches)	Actual Crack Length (inches)	Actual Crack Depth (inches)	Side of Specimen
A011	0.062	0.086	0.029	A
		0.098	0.036	A
		0.362	0.044	A
		0.352	0.042	A
B004	0.211	0.116	0.030	A
		0.478	0.128	A
		0.510	0.094	A
C044	0.060	0.058	0.011	B
		0.052	0.011	B
		0.025	0.003	A
		0.026	0.017	A
		0.033	0.017	A
C100	0.208	0.076	0.034	A
		0.097	0.032	A
		0.131	0.045	A
		0.040	0.010	A
		0.055	0.017	A
		0.041	0.011	A
C101	0.210	0.140	0.052	A
		0.094	0.032	A
		0.103	0.035	A
		0.064	0.023	A
		0.055	0.016	A
		0.106	0.035	A

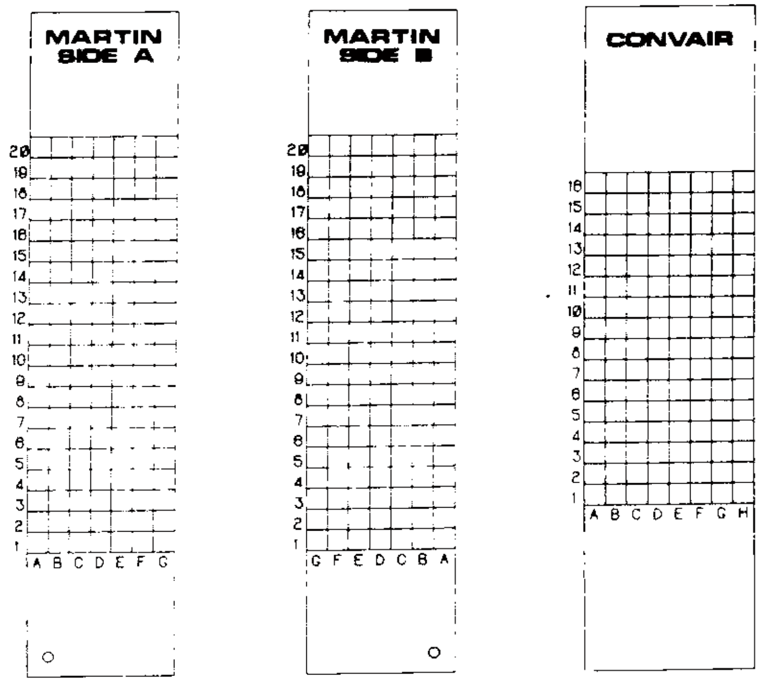

Figure 3. Specimen Overlay Transparencies

The specific technique parameters considered and their radiographic effects were as follows:

Parameter	Effect
Energy (kilovoltage)	Image contrast
Focal spot size	Image sharpness
Focal film distance	Image sharpness
Angle (source to flaw)	Distortion
Film	Image contrast/sharpness
Film density	Film contrast

The reference standard specimens with specific crack identification were used experimentally to determine the most favorable radiographic technique. The energy level selected proved to be a primary consideration in establishing a technique which would image a tight crack. By X-raying the cracks, 0.086 inch long and 0.029 inch deep, in specimen No. A011 at 30 kv through 60 kv, it was found that the crack would not image when energies above 40 kv were used. The image sharpness was improved through this same energy spectrum by reducing the focal spot size from 2.5 mm to 0.7 mm and increasing the focal film distance from 24 inches to 36 inches. By varying the parameters individually, it was shown that the contrast (through energy selection) was much more significant than the image sharpness variance (due to changing the distance and focal spot size).

The same relationship was found to be true for specimens 0.210 inch thick which were exposed to an energy spectrum of 40 kv to 75 kv. The selection of the energy level was dictated to some extent by the exposure time required. The image unsharpness produced by the technique employing a 24-inch focal film distance with a 2.5-mm focal spot was calculated to be 0.00025 inch for specimens 0.060 inch thick and 0.00118 inch for specimens 0.210 inch thick. (These values are well within reasonable tolerances for unsharpness.)

A second parameter which greatly affected the detection capabilities was the orientation of the crack with respect to the angle of penetration. It was logically assumed that the most favorable orientation for imaging a crack would be one in which the axes of the crack interface plane and the angle of penetration were parallel. The optimum orientation would diminish as the penetration angle approached an angle perpendicular to the crack plane. It was found, by incrementally offsetting the crack from an orientation parallel to the source, that at a lateral offset distance greater than 2-1/2 inches or at an angle of approximately 84 degrees, the crack 0.086 inch long and 0.029 inch deep in specimen No. A011 was distorted to such an extent that it could no longer be identified on the radiograph (Figure 4). It was assumed that this crack plane was perpendicular to the surface of the test specimen. Should the crack plane be other than perpendicular to the surface, that angle could be compounded, thereby reducing the effective area of sensitivity greatly or prohibiting detection completely.

Three different Kodak films were evaluated for possible use. Kodak Type AA film proved to be too grainy and lacked sufficient contrast. Kodak Type R double-coated film produced the sharpest image of those evaluated and the greatest contrast, but was not selected because the increase was not significant enough to justify the greater exposure time (twice that of Type M). Exposures were made at higher kilovoltages with Type R film to determine whether the superior quality of the film would offset an increase in kilovoltage, but better resolution was achieved at lower kilovoltages with Type M film.

For these reasons, Type M film was ultimately selected and used. Exposure times were established to produce a desired film density of 3.0 H&D with an acceptable range from 2.5 to 3.5 H&D. The maximum density which could easily be evaluated with the available light source was determined to be 3.5 H&D. It was desirable to use film as dense as possible to take advantage of the greater film contrast available at higher densities. All exposures were made with Seifert 150 kv constant potential X-ray machines having 2.5-mm and 0.7-mm focal spots. Figure 5 illustrates the X-ray inspection facility. All film was processed in an X-O-Mat Model B automatic film processor.

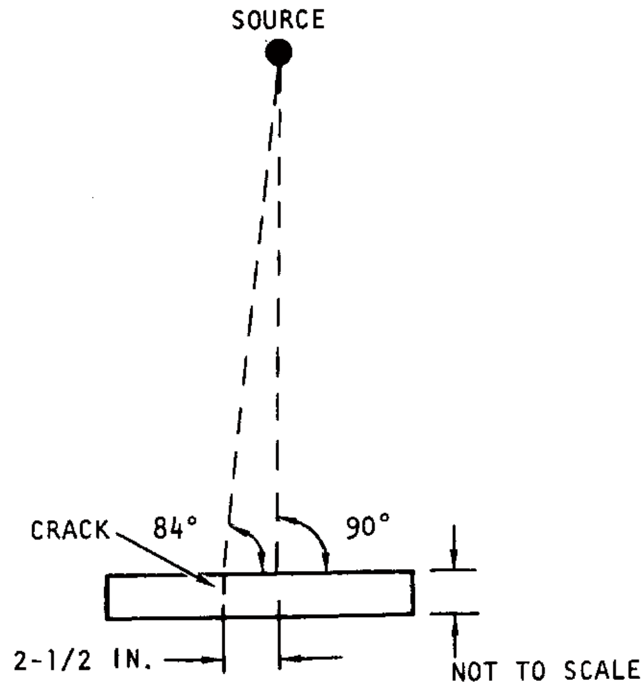

Figure 4. X-Ray Beam-Angle-to-Flaw Relationship

Inspection Procedure

Two specimens were exposed simultaneously, side by side. Two exposures were made for each specimen. For the Convair specimens, which measured 8 inches long in the area inspected, the first exposure was made 2 inches to the left of center, and the second exposure 2 inches to the right of center. For the Martin specimens, which measured 10 inches in the inspection area, exposures were made 2-1/2 inches to the left and 2-1/2 inches to the right of center. (See Figure 6.) Film was placed under the entire test specimen for each exposure. The other parameters were as follows:

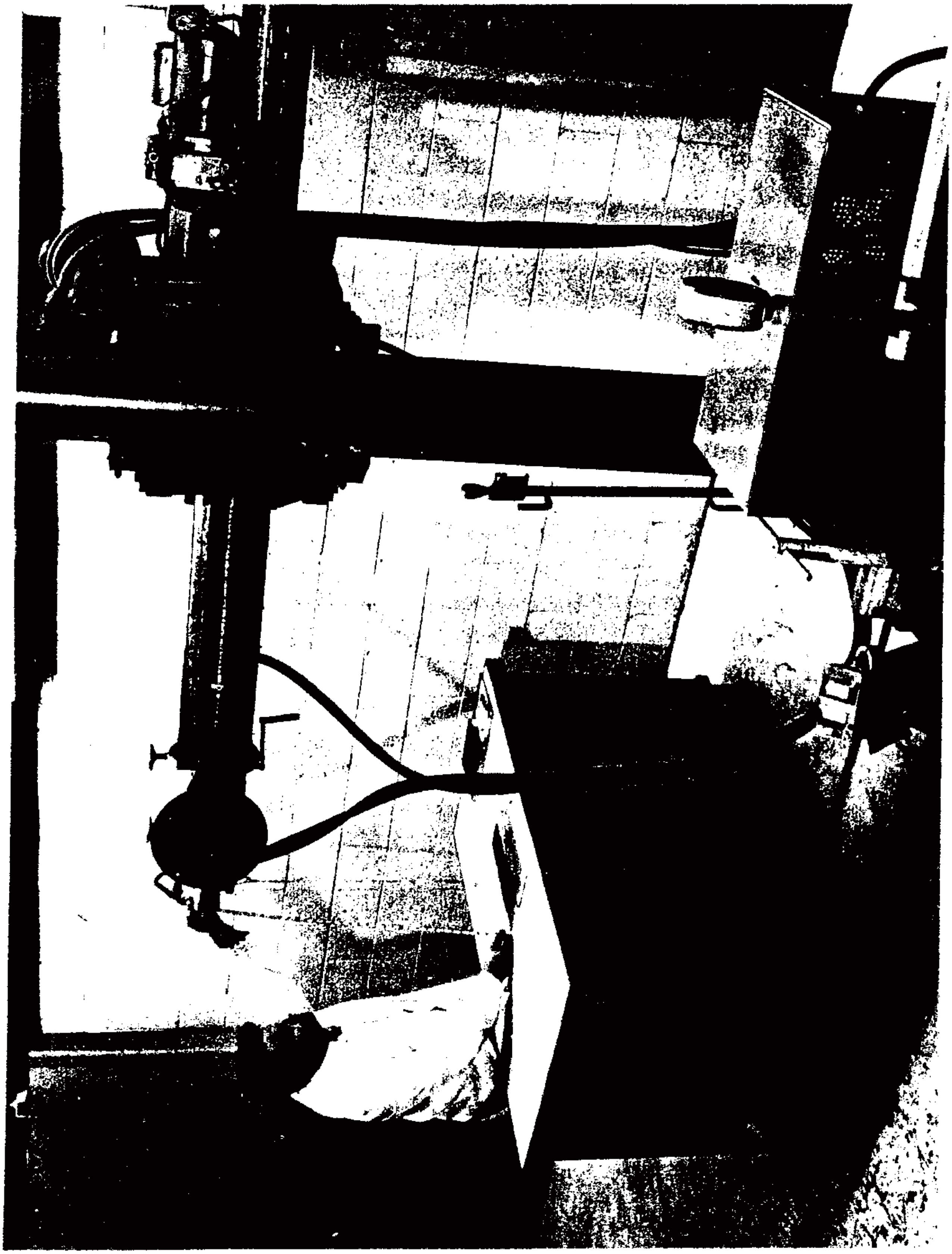

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Figure 5. X-Ray Inspection Facility

Focal film distance (inches)	24
Kilovoltage	
0.060-inch specimens	30
0.210-inch specimens	40
Focal spot size (mm)	2.5
Milliampere seconds	
0.060-inch specimens	1,000
0.210-inch specimens	2,700
Film	Kodak, Type M Ready Pac

Only one set of radiographs was made so that each inspector would evaluate the same radiographic image. The X-ray films were independently interpreted by three different radiographic inspectors. These inspectors had no prior knowledge of crack locations and were not involved in exposing the film. The radiographs were viewed with the aid of a 2X table-top magnifier and a high-intensity X-ray film viewer. Crack indications were marked on

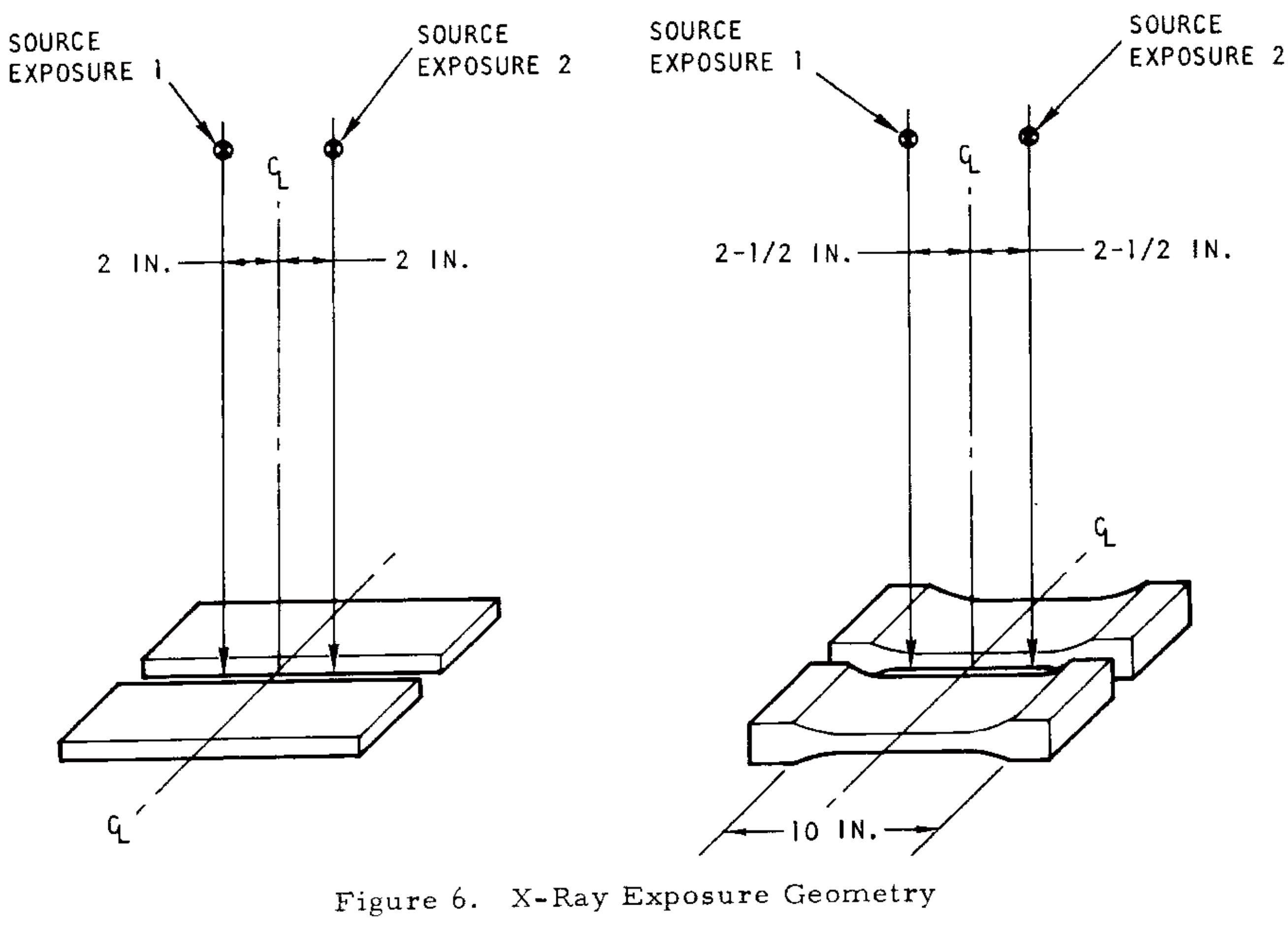

Figure 6. X-Ray Exposure Geometry

the radiograph with a black grease pencil. (Although white is normally used, black was the easiest to remove completely, thereby preventing visual cues for subsequent interpreters.) Crack lengths were measured with a 7X optical comparator. The crack locations were identified by placing a grided mylar over the radiograph and recording the grid location on a reporting form showing the same grid pattern. The crack length shown on the radiograph was also recorded. After the radiographs were evaluated, all evidence of grease markings was removed with soft tissues. Figure 7 shows the X-ray interpretation operation. Figures 8 and 9 depict crack indications on radiographs.

FLUORESCENT PENETRANT

Technique Selection

Special evaluation of methods to optimize the technique was not considered necessary for the penetrant inspection. A medium sensitivity-level (Shannon P-133) water-washable penetrant and a nonaqueous wet developer (Shannon D-495A) were selected as the penetrant inspection materials. This sensitivity level was selected to allow use of the same penetrant materials for all the specimens. Some of the specimens were machined with surface finishes extending to 300 RMS. (The surface finish presents extremely difficult interpretation problems when high-sensitivity penetrants are used on rough surfaces.) The cleaning of the specimens between inspections by different inspectors required a closely controlled cleaning operation to remove all penetrant indications from the previous inspection. Test specimens were processed through a degreasing operation, followed by five minutes in an ultrasonic cleaning unit which used Freon to remove all penetrant indications.

Inspection Procedure

The penetrant materials and equipment used for the inspection of the test specimens were standard items employed at the Space Division for production inspection operations. Specifically, the penetrant materials were Shannon Luminous Products, P-133 fluorescent water-washable penetrant, and D-495A nonaqueous wet developer. (See Figures 10 and 11.)

The application procedure used for this inspection varied slightly due to the configuration differences between the Convair and Martin Marietta samples. The following procedure was used throughout the three independent penetrant inspections:

1. All test specimens were precleaned prior to the initial penetrant inspection by undergoing a vapor degreasing operation followed by ultrasonic cleaning with Freon.

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Figure 7. X-Ray Interpretation Facility

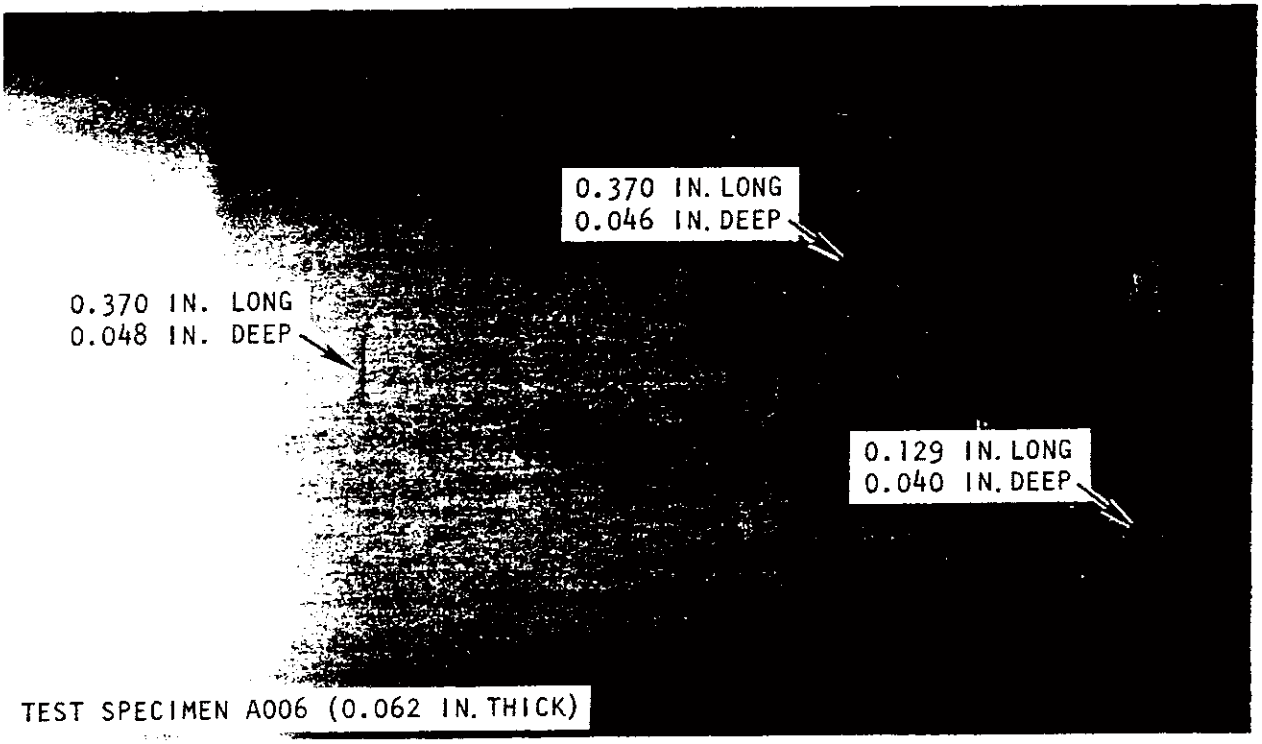

Figure 8. Crack Indications (Perpendicular to Grain Roll) on Radiographs

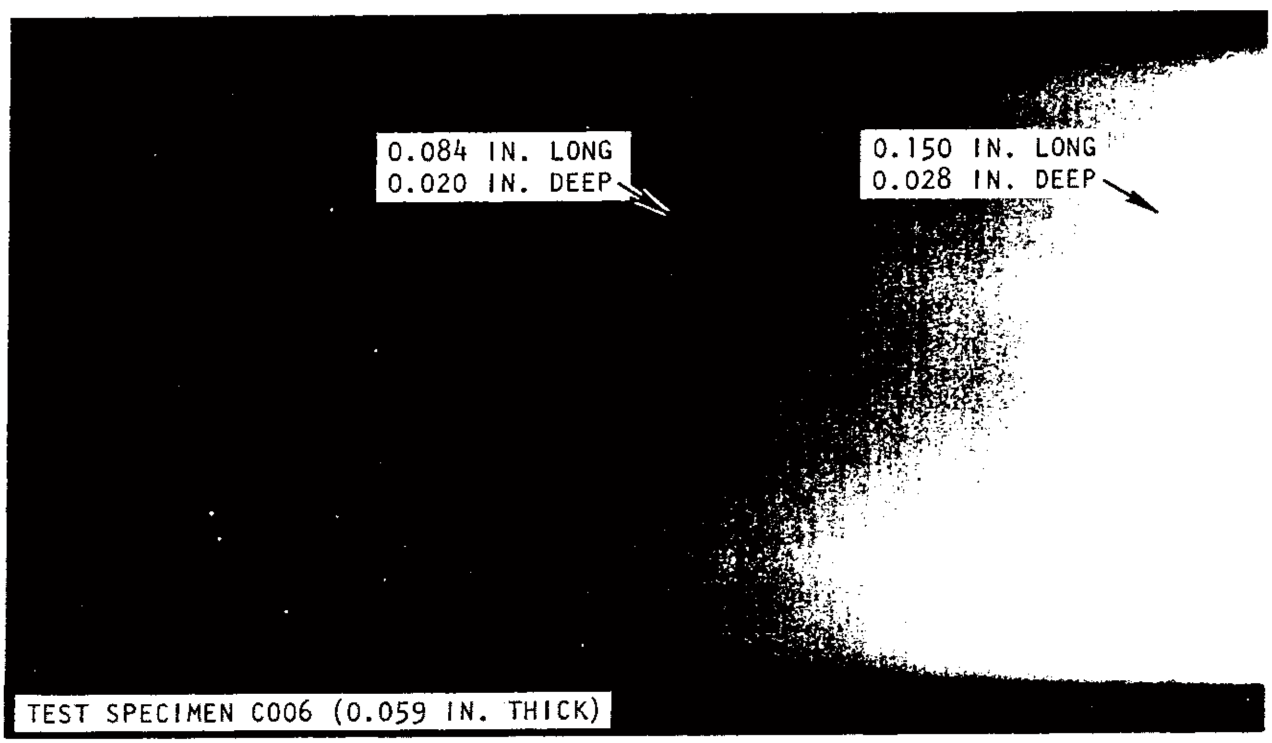

Figure 9. Crack Indications (Parallel to Grain Roll) on Radiographs

Figure 10. Fluorescent Penetrant Operation

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7011-86-115B

Figure 11. Penetrant Inspection Interpretation

2. The penetrant was applied in two ways—dipping or brushing. The Martin Marietta specimens were dipped, since both surfaces of each specimen required inspection. The penetrant was applied to the Convair specimens by brushing, since only one surface required inspection.

3. A minimum penetrant dwell time of 15 minutes was allowed for each specimen.

4. Following the penetrant dwell time, the excess surface penetrant was removed by a water spray.

5. After the washing sequence, the specimens were positioned on edge in a recirculating air oven, set at 170 F, until all surface moisture was removed.

6. Upon reaching ambient temperature after removal from the oven, a nonaqueous wet developer was sprayed on the surfaces to be inspected.

7. A minimum development time of five minutes was allowed for each specimen.

8. Following the allotted development time, the surfaces of each specimen to be inspected were viewed under black-light excitation, and each flaw was marked. Figure 12 illustrates typical penetrant indications.

9. After the inspection sequence, grided mylar overlays were placed on each specimen; and the flaw locations and measured lengths were recorded on specimen data sheets corresponding to the layout of the overlay mylar.

10. The specimens were cleaned by water washing (to remove the remaining surface developer), vapor degreasing, and ultrasonic cleaning prior to the next complete penetrant operation.

EDDY CURRENT

Technique Selection

Eddy current scan speeds and sensitivity levels were established by experimentation. In order to maximize detectability, the highest gain levels were employed. The scan speed selected represented a compromise between sensitivity levels and the schedule for completing the inspections. The eddy current frequency was dictated by the instrumentation used and was

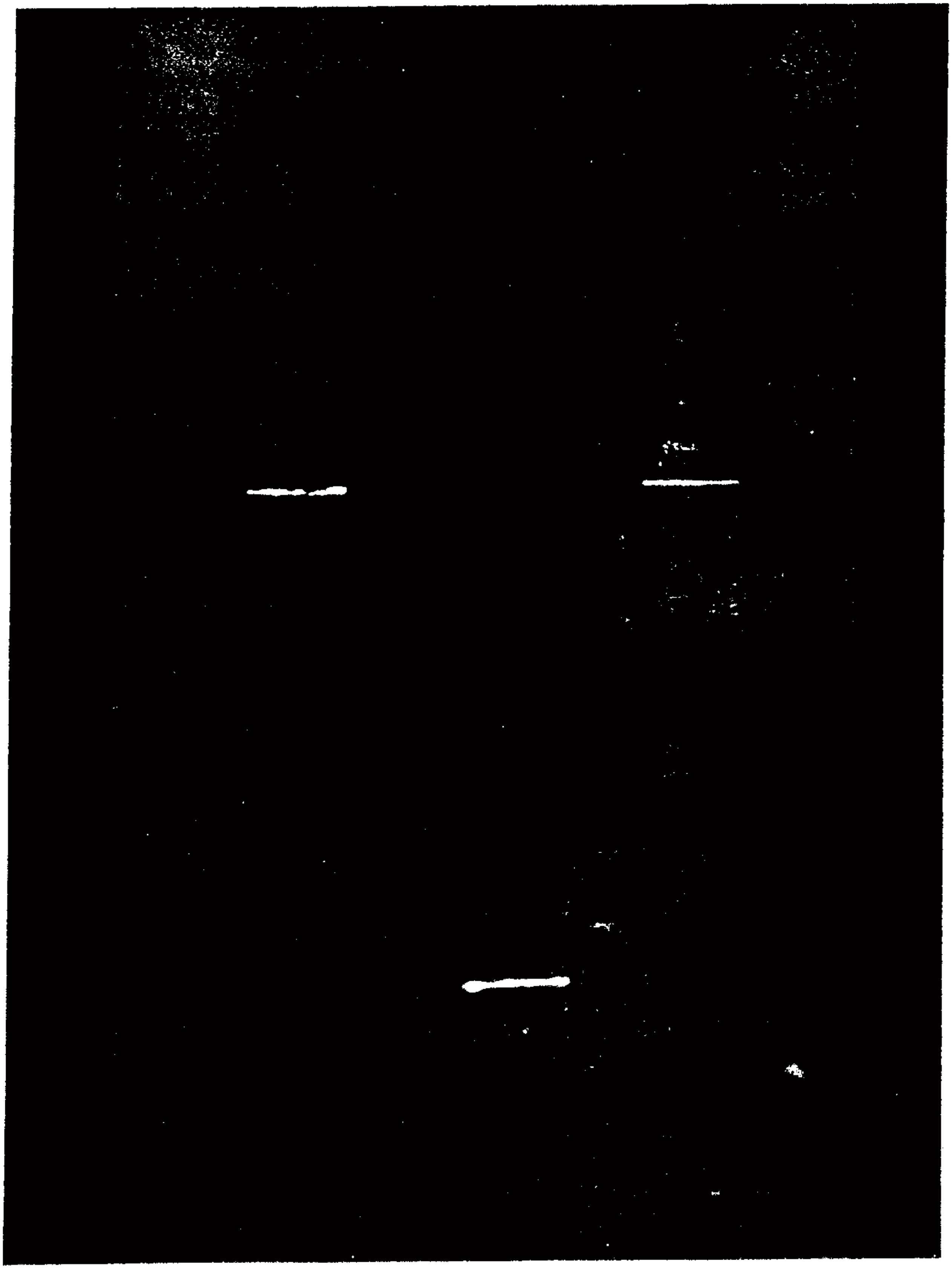

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Figure 12. Typical Penetrant Indications

2 megahertz. Eddy current C-scanning of flat specimens is not a commonly used NDE technique at the Space Division. A laboratory ultrasonic C-scan system was modified to perform the eddy current C-scan inspection (Figure 13).

The system was modified by allowing the alarm gate of the Defectometer to turn the paper-write circuit on and off. A separate 24-volt dc power supply was used to provide power to the recording circuit of the facsimile recorder. In order to obtain high sensitivity, it was necessary for the probe holder to ride directly on the surface to be scanned. A support for the probe holder was fabricated to maintain the eddy current probe flush on the surface.

The eddy current probe itself was mounted in a 1/2-inch acrylic holder which was spring-loaded in the support. (Although a roller configuration might have been superior, time limitations prevented development of this capability.)

Corrections for the edge noise and panel sensitivity were considered in technique development. Each scan was measured to obtain an average value of the noise (noise index, NI) and sensitivity (sensitivity index, SI). During scanning operations involving Martin Marietta specimens, variations due to differences in specimen conductivity were evident. In some extreme cases, specimen variation effects showed a completely black C-scan, while another specimen would show all white with a low noise level (Figure 14).

To reduce this effect, two specimens were selected as standards - C100, A-side, for thin (nominal 0.060-inch thickness) specimens and C044, A-side, for thick (nominal 0.210-inch thickness) specimens. All or part of the standard specimen was scanned with every scan of the remaining specimens. The size of the indications on standards C100 and C044 varied from scan to scan. For the remaining specimens, a relative sensitivity index was calculated from the average of the defect size indication compared to the C100 and C044 standard scan (used to correlate depth and length indication with actual depth and length of cracks).

For the Convair specimens, A011 and B004 were used as standards. That is, the indication sizes on these specimens were plotted versus the actual flaw size data available prior to destructive analysis. The Convair correlation curve was also used for the Martin specimens.

The equipment used to inspect the specimens required progressive adjustments to maintain maximum sensitivity during the inspection operation.

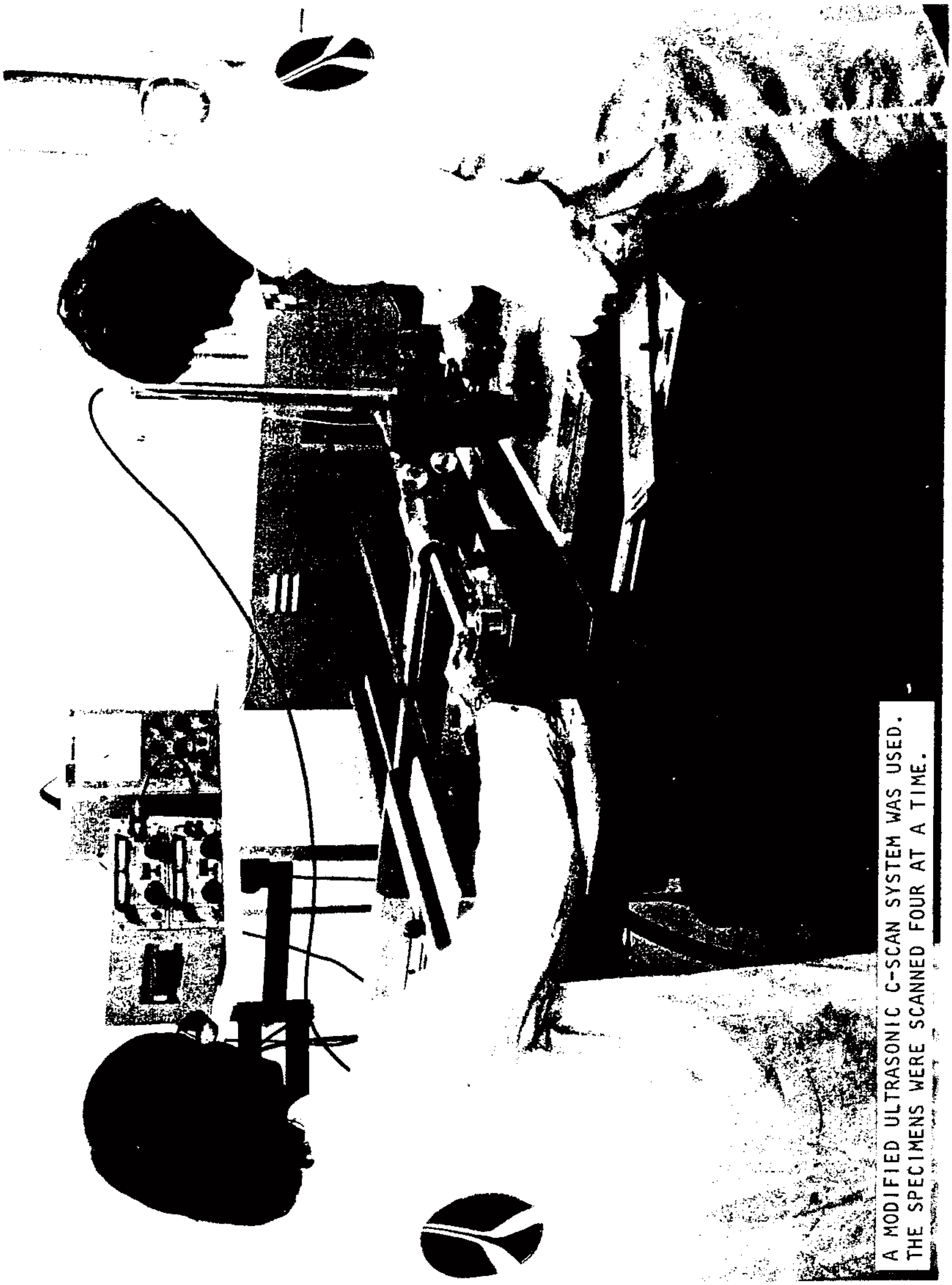

Figure 13. Eddy Current Inspection Facility

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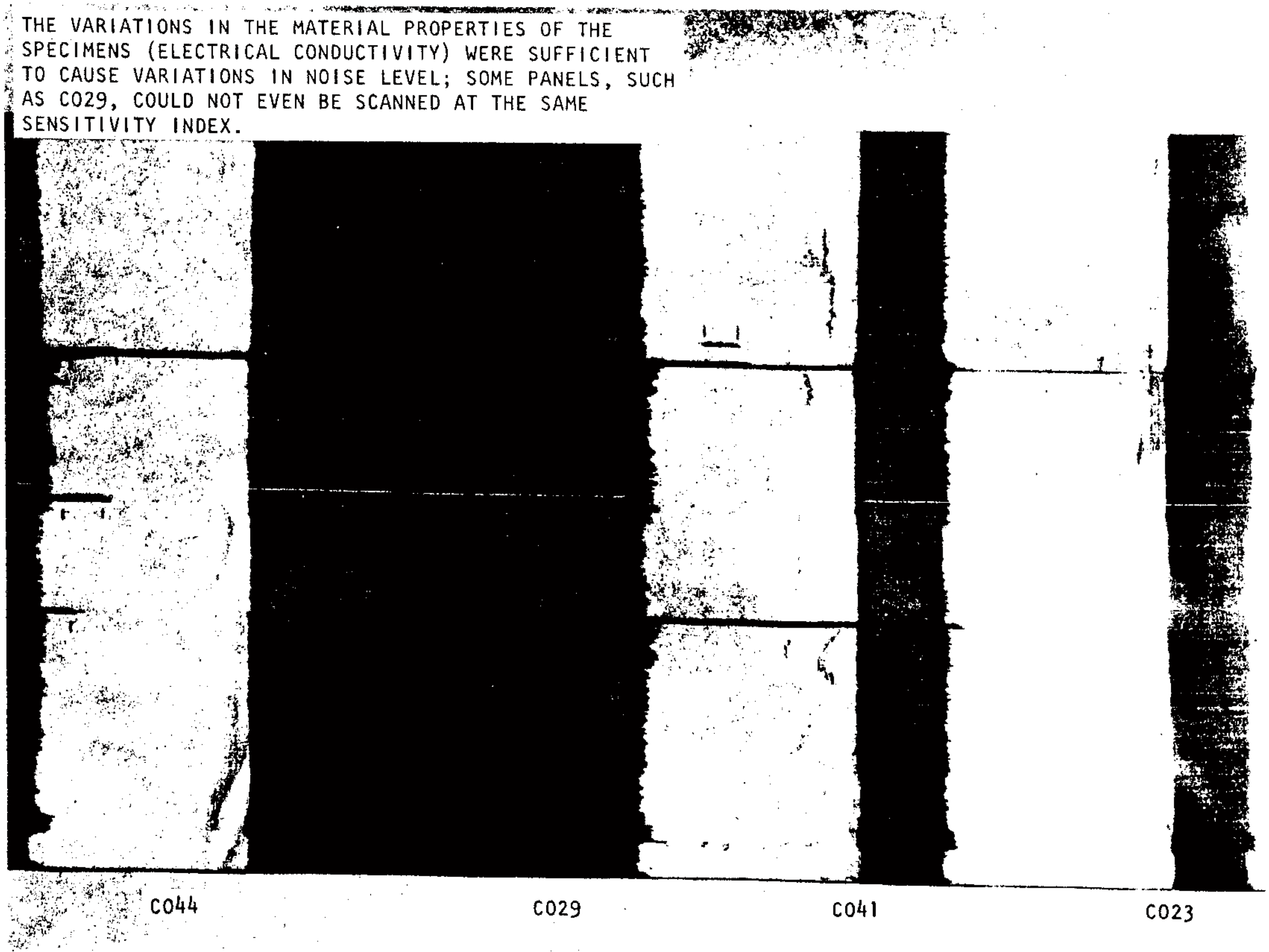


Figure 14. Eddy Current C-Scans

Inspection Procedure

The eddy current procedure to inspect the test specimens and record the flaws utilized available in-house equipment. The automated eddy current C-scanning used a pencil-type surface probe, activated by a Forster Defectometer, Model 2.154, with an ultrasonic C-scan bridge, and an Alden recorder. A 24-volt, 20-milliampere power supply was used to drive the C-scan recorder system.

The test specimens were positioned under the movable bridge so that four specimens could be scanned at one time. To facilitate the group scanning, six specimens were arranged side by side, providing a flat, level, continuous surface for the probe head during the scanning cycle. Undersize test specimens were shimmed to make all specimens level, and metal filler bars were used between parts where necessary to provide a continuous smooth surface for the probe assembly.

The 2-megahertz surface probe was mounted in the spring-loaded probe holder (floating head) and adjusted to about half the spring tension (a few pounds force). The eddy current probe tip in the holder head was adjusted to a partially retracted operating position of 0.005 to 0.025 inch off the metal surface. A manually controlled test run was made to ensure that the floating head was in direct contact with the metal surface and that the head ran smoothly, without interference, over all the specimens. Probe holder geometry permitted surface scanning to within 3/4-inch of the top and bottom edges of the test area.

The Defectometer and recorder were connected as shown in Figure 15 and the Defectometer control (Figure 16) was turned on (green light ON), allowing the unit to warm up for five minutes. During the warm-up interval, the recorder was actuated; and the stops on the bridge setup were adjusted to reduce overshoot of the test surface at fast scanning speeds. The test scanning was performed at 32 feet per minute with an index interval of 0.023 inch.

After the prescribed five-minute warm-up period, the Defectometer was balanced by adjusting the zero level to read ZERO SCALE when the probe was off the specimen. Then the probe was shifted to the specimen surface, and this zero-scale readout was made by adjusting the lift-off or compensating for the specimen-to-probe spacing. Several repetitive adjustments, alternating from zero level to lift-off, achieved the desired balance to within a few minor divisions of zero scale.

All Defectometer scanning controls were adjusted from the standard specimens with known flaw sizes as follows:

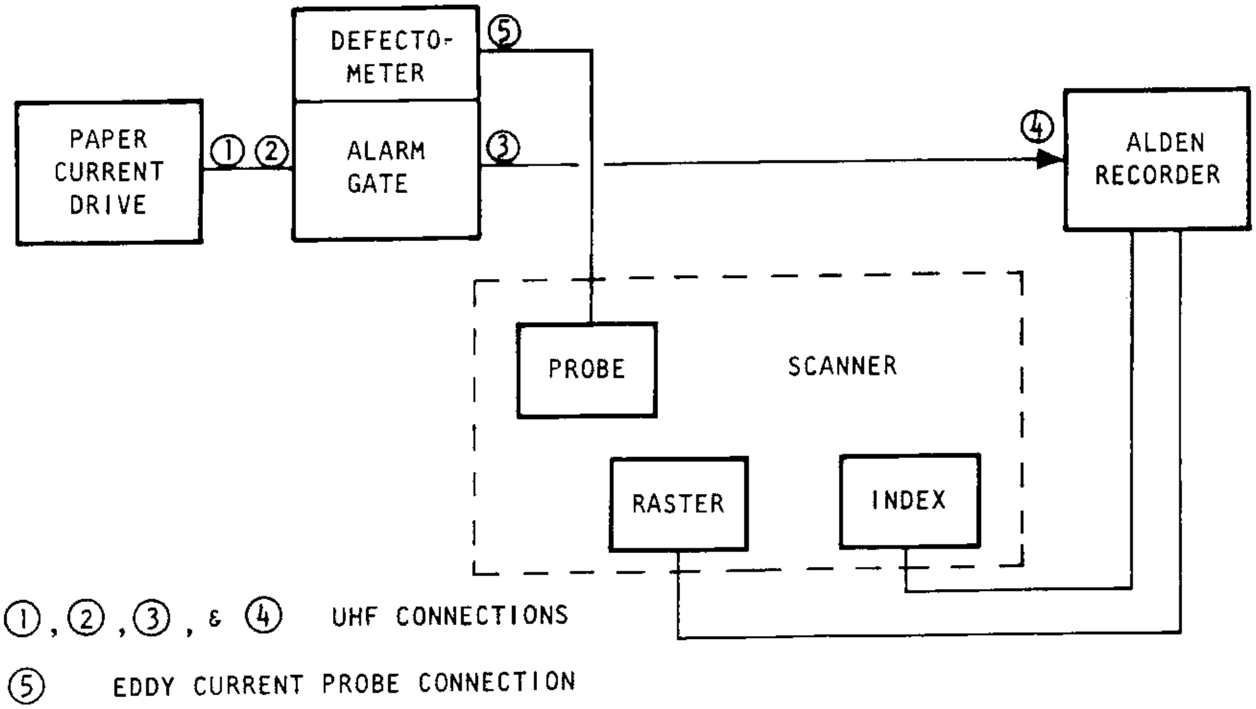


Figure 15. Eddy Current C-Scan Equipment Arrangement

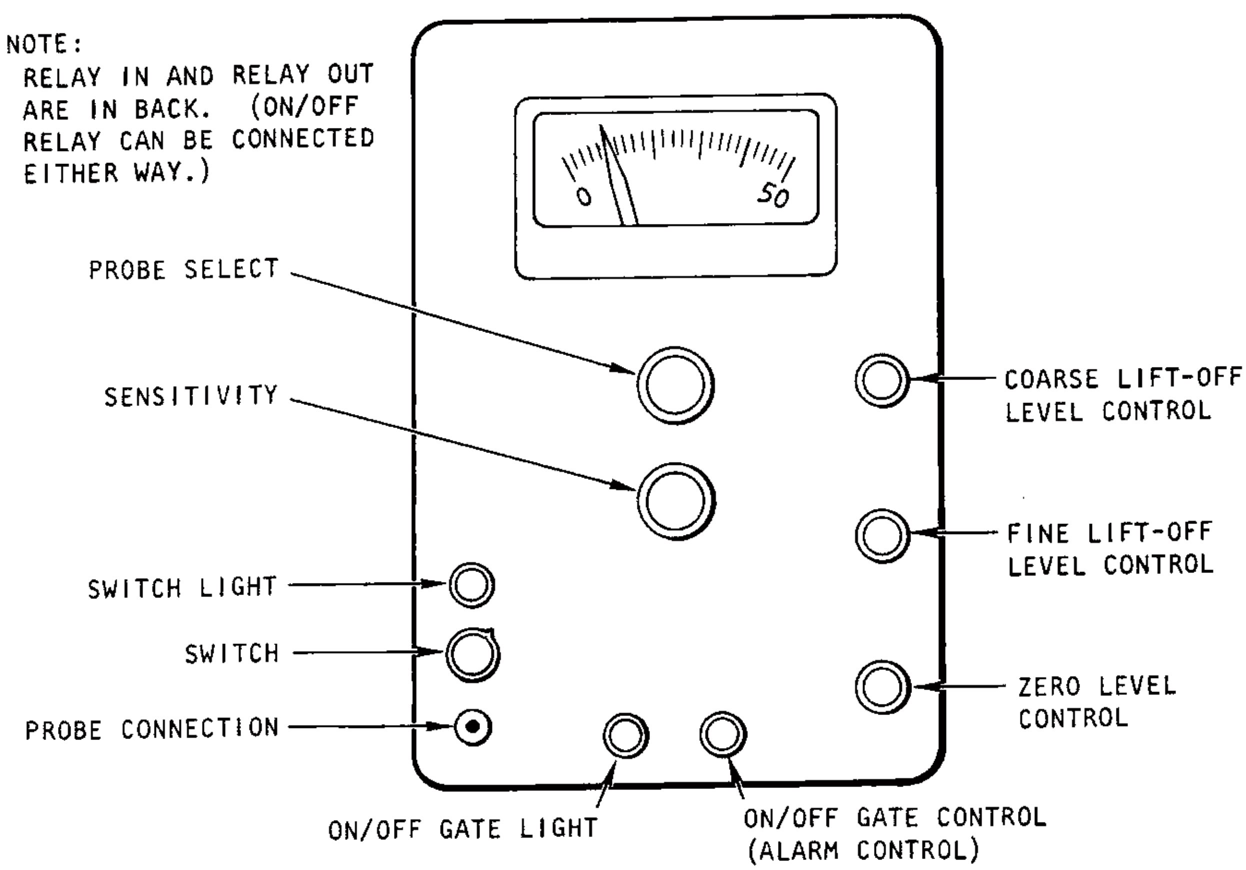


Figure 16. Defectometer Controls

1. The alarm gate was adjusted to such a degree that the alarm light just went on.

2. With the alarm light on, the writing density of the Alden recorder was adjusted to achieve a uniform dark scanning line.

3. The alarm gate was adjusted again by the fine lift-off control so that the alarm light actuated ON and OFF as the specimen was scanned.

4. Final adjustments of the sensitivity and fine lift-off controls, respectively, were made while the probe scanned the area with smallest crack in the specimen standard. Maximum resolution was about 0.010 inch depth for 1/8 inch length. Optimum sensitivity was achieved when the lift-off control adjustment was just below the point at which the alarm light went on continuously.

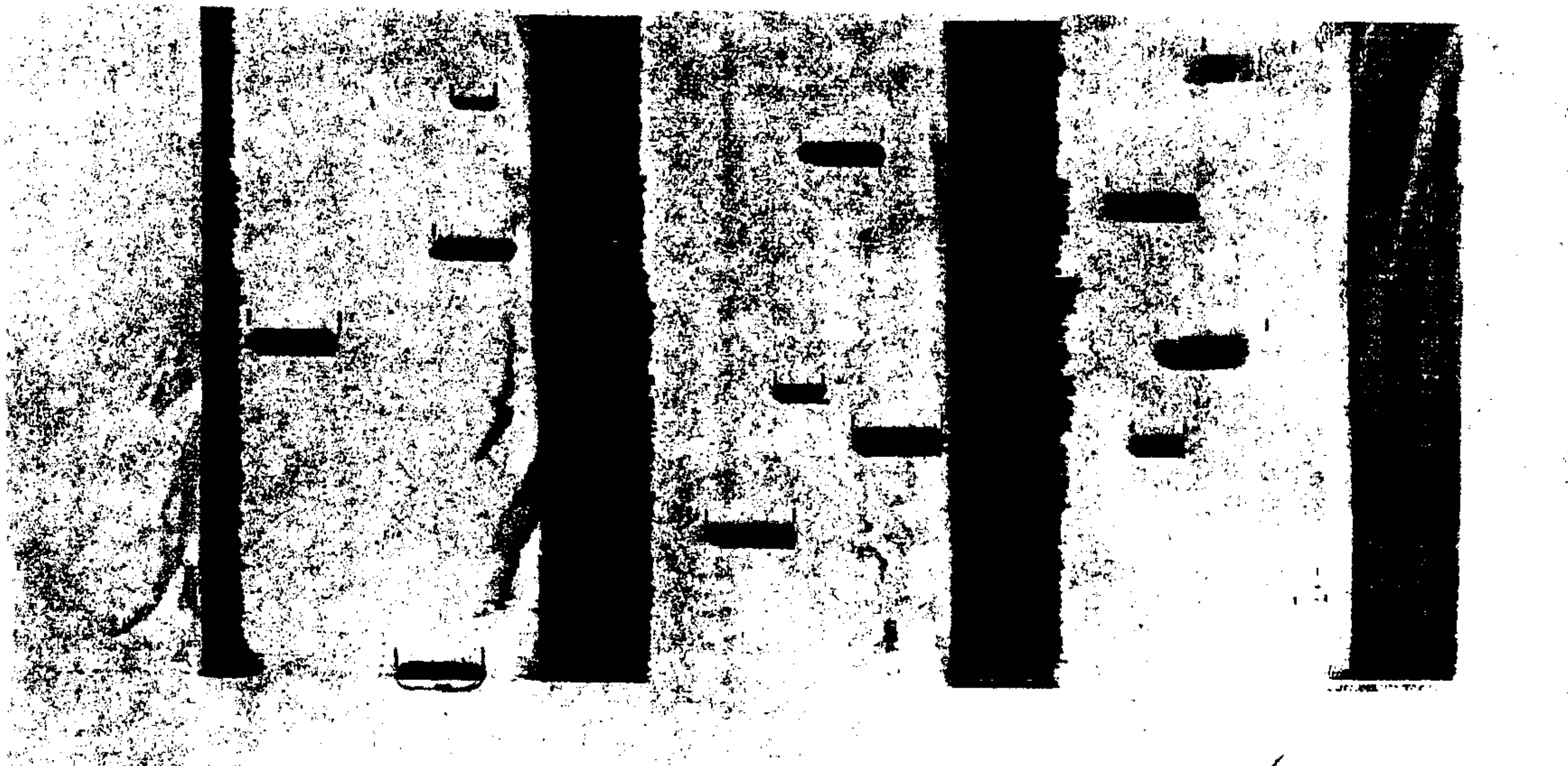
During scanning operations, wear of the probe holder necessitated additional fine lift-off adjustments to maintain optimum sensitivity.

The C-scan resulted in a 1:1 ratio plan view of four specimens side by side with the surface defects evident as dark areas (Figure 17). The edges between the specimens were also represented as dark areas. Because the specimens were of the same width, the width of the white area between the dark areas produced by the specimen edges could be used as a relative measure of the sensitivity—the larger white area or distance indicating a lower sensitivity and the smaller distances indicating a higher sensitivity.

Along the leading edge, noise was evident. Sensitivity was optimized by maintaining the noise level in the edge and then establishing a constant sensitivity while scanning. All scanning was done with a maximum sensitivity setting and the fine lift-off control governing the actual sensitivity. Direct scanning, parallel to the cracks, represented the maximum defect-sensitive response obtainable.

Interpretation consisted of measuring the length and width of the eddy current C-scan indications. The length of the indication was correlated with the length of the crack, while the width of the indication was correlated with the depth of the crack. The correlation was established by plotting the best known values of length and depth for the standards (the destructive analysis being incomplete at this time) as a function of the actual indication length and width.

The location of the detected flaws was recorded on data sheets from the C-scans which employed the transparent overlay grid illustrated in



B018	B022	B012
SENSITIVITY INDEX - 7.95	SENSITIVITY INDEX - 8.10	SENSITIVITY INDEX - 7.8
NOISE INDEX - 0.15	NOISE INDEX - 0.12	NOISE INDEX - 0.22
RELATIVE SPECIMEN NOISE INDEX - 0.05	RELATIVE SPECIMEN NOISE INDEX - 0.18	RELATIVE SPECIMEN NOISE INDEX - 0.02

THE LENGTH OF THE INDICATION IS RELATED TO THE LENGTH OF THE CRACK, WHILE THE WIDTH OF THE INDICATION IS RELATED TO THE DEPTH OF THE CRACK. NOTE VARIATIONS IN NOISE LEVEL ALONG EDGES.

Figure 17. Eddy Current C-Scans Showing Typical Flaw Indications

Figure 3. The results were subsequently encoded into a computer word 17 bits long, as were the other inspection results described in Section IV.

ULTRASONICS

Technique Selection

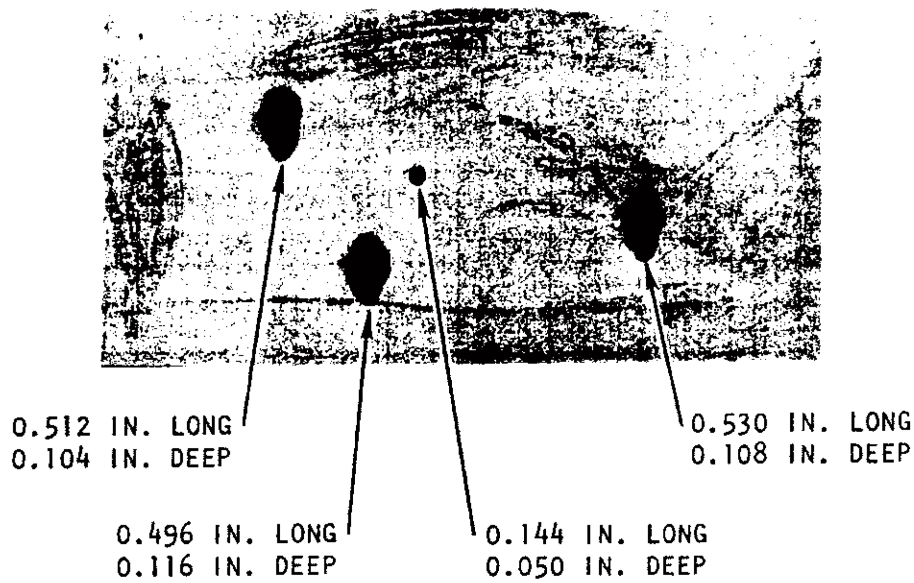
The most appropriate ultrasonic techniques for detection of fatigue cracks, such as those evaluated in this program, consisted of propagating shear and/or surface waves through the specimen at angles which gave maximum reflected signal response from the flaws. These responses were the result of ultrasonic wave reflections that return to the transmitting transducer because of discontinuities within the path of the wave propagation. The reflected responses from the flaws appeared on a CRT display while they were simultaneously recorded in a form that could be analyzed and evaluated. The C-scan technique was used for recording and displaying these responses. The C-scan normally consists of an X-Y plan-view plot of the relative size and location of the discontinuities within the specimen.

C-scan recordings were used to interpret the inspection results. The two typical recordings in Figure 18 express the defects as distorted elliptical shapes, the long axis representing the flaw length and the short axis representing the depth. The full-size recordings indicated slightly greater lengths than the actual size of the defects.

These recorded flaws can best be described as indications of the flaw if it were rotated 90 degrees and laid flat on the surface for photographic purposes. Therefore, the depth of the flaw is related to the narrow axis at the elliptical shape. This attainable depth value was not recorded during these inspections because the accuracy of this dimension is dependent upon gating techniques. It was necessary to vary the gate settings to eliminate the reflections from the rough surfaces on some of the specimens.

The ultrasonic testing facility is shown in Figure 19. Transducers, frequency, and gain levels were determined by experimentation. Conditions were chosen which allowed detection of the smallest cracks without detecting false indications, since the primary cause of false indications was the rough machine finish. The technique developed and used allowed detection of cracks on either surface from one side. Several different ultrasonic techniques were evaluated, including variations of shear-wave and surface-wave modes. The technique selected was a trade-off of factors to minimize the occurrence of the false indications due to the rough machined surface finish on some of the specimens. Because of the wide variety of surface finishes, it was difficult to optimize the crack detectability for all crack sizes and all specimens. It was desired to select one optimum technique for all specimens if possible. From an ultrasonic inspection standpoint, a crack a few

SPECIMEN NO. B011



SPECIMEN NO. B016

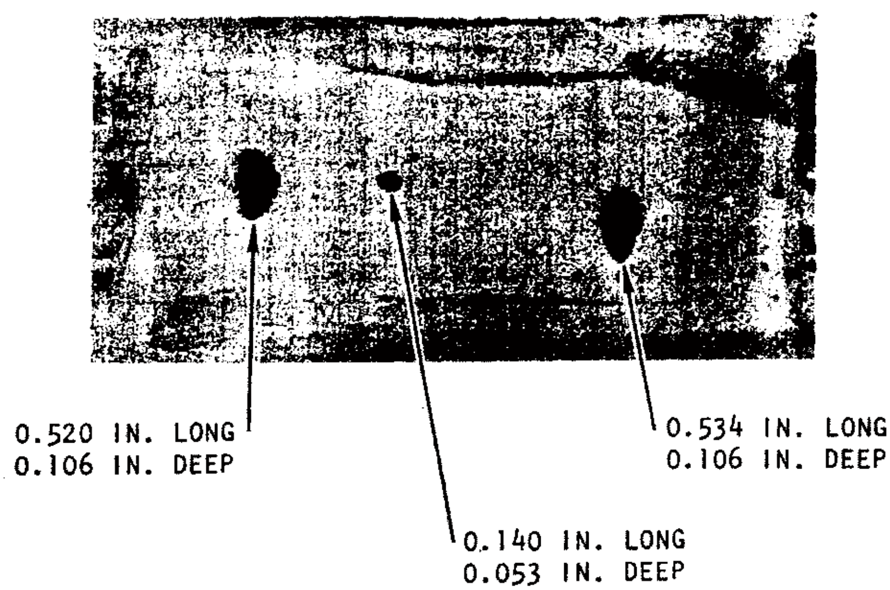
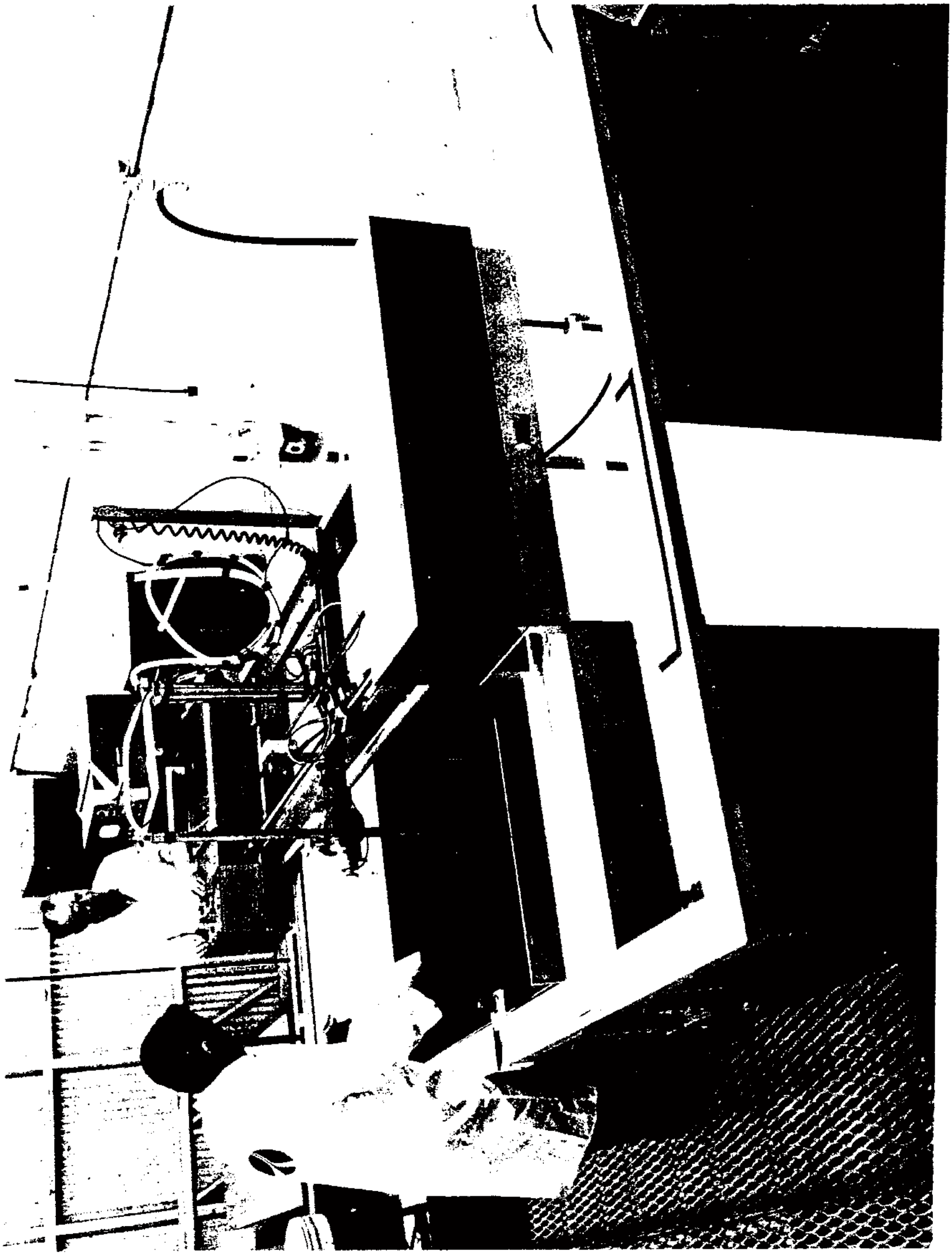


Figure 18. Typical Ultrasonic C-Scan Recordings



7011-86-115E

Figure 19. Ultrasonic Inspection Facilities

thousandths of an inch deep is not much different from a machine surface mark a few thousandths of an inch deep. Thus, the deeper flaws are much less affected by the surface finish than are the shallow flaws.

Inspection Procedure

The method for inspecting the specimens was the immersed shear-wave technique. The shear-wave technique, as previously discussed, provides angulated ultrasonic wave propagation through the specimen to obtain reflections from cracks oriented perpendicularly to the surface planes. However, to successfully distinguish the crack reflections from other reflections, several parameters must be considered and controlled during the inspection operation. The following parameters will be discussed as they relate to the inspection procedure.

C-Scan Recording

C-scan recording techniques were used to provide a data readout of detected flaws, whose relative sizes could then be evaluated. The recorded defects were measured and reported by length only; and all dimensions reported were larger than actual size, due to the use of a 1/4-inch flat-faced transducer. (Focusing transducers would have provided more accurate dimensions.)

Test Specimen Positioning

The relative positions of the specimen surfaces were maintained level with the C-scan bridge and were monitored for each scan sequence by repeating the scan of a standard specimen with each series of test specimens evaluated.

Procedure

Test specimens described in Table 4 were used as reference standards. Sensitivity adjustments were made for the total ultrasonic detection system to establish the C-scan standard defect recording to a relative size. The adjustments included gain, gating position and width, water path, and angle. The incidence and refracted angles were determined by using the test specimen edge as a reflector. Maximum response was determined by a series of transducer-to-specimen angles, the relative amplitude changes of which were observed in the detected video. After optimizing response from the specimen edge and noting the angle, slight angle adjustments were made to maximize the response of the reference standard flaws. The incidence angle for all specimens was between 18 and 19 degrees from normal, providing an aluminum refracted angle of 40 to 42 degrees. The angles were chosen for their adequate flaw response and their minimized surface reflections, which would not be gated and recorded, masking the flaws. The machined surface roughness of

the specimens, especially those with RMS readings of approximately 300, were very responsive to specific sound-propagated angles and required a slight angle change to allow flaw detection.

Transducer

A 1/4- by 1/4-inch square, 2.25-megahertz, flat ultrasonic transducer was used throughout the test.

Ultrasonic Flaw Detector

A Model 725 Immerscope with an R-1 receiver and an FG-2 flaw gate provided the additional ultrasonic instrumentation required to transmit, receive, display, detect, and record the transducer responses. The displayed reflected responses from the reference flaws were gated and monitored to provide C-scan recordings of the flaws without interference from the rough surfaces. The selective gating prevented accurate depth evaluation; therefore, the flaw sizes were recorded for the length dimension only. The location of the flaws detected in each specimen was recorded by use of the transparent overlay grid which was placed over the C-scan recordings.

IV. INSPECTION RESULTS

Each Space Division inspector maintained a record which listed all the defects found. The specimen identification number, together with the size and location of each flaw detected, was recorded from the grid overlay system described in Section III. This information was encoded into a 17-bit computer word as shown in Appendix A. All the Rockwell inspection results were encoded for computer processing directly from the inspection records.

Martin Marietta and Convair encoded their inspection results in the same manner as Rockwell. Each company inspected specimens in a similar manner, observing not only its own, but also those of the other company. The complete inspection results of each company were given to Rockwell for a consolidated analysis of all data regarding the four basic NDE techniques—ultrasonic, eddy current, penetrant, and radiographic.

Martin Marietta and Convair's destructive test results and analyses to determine the exact flaw sizes of each test specimen were provided in the same format as the assumed flaw sizes were before the destructive test analysis. These actual flaw size data were encoded into a computer format acceptable for processing together with the inspection results.

Additional information regarding the specimen thickness and surface finish was also encoded for inclusion in the analysis. Various other parameters which applied to the effectiveness of any of the four techniques—such as depth-to-thickness ratio (a/t), projected crack area $[\frac{\pi}{4}(2c)(a)]$, crack aspect ratio (a/2c), and X-ray flaw incidence angle—were also entered into the computer program for processing and analysis.

The tab runs were made by sorting the various flaw parameters. These data were based on the actual flaw sizes determined by destructive analysis. The data analysis approach was binomial in that no comparative analysis was made regarding the reported flaw size versus the actual destructive flaw sizes. Nor was consideration given to Type II errors (reject nonexistent flaw). The analysis was limited to the inspector's ability to detect each intentionally induced flaw in the specimens. The detectability by flaw size was computed by comparing inspection results with the actual flaw sizes determined from the destructive test analysis of the specimens.

V. DATA ANALYSIS

The inspection results presented in the previous section can be analyzed in many different ways. The approach taken in this study has been to emphasize statistical analysis and fundamental nondestructive evaluation theory relating to the proper flaw parameter from which sensitivities of the four NDE techniques can be reported.

Flaws have several parameters which can be defined, such as length, depth, area, etc. Length is a commonly measured crack parameter in nondestructive evaluation. The flaw detection level, however, is characteristically dependent on certain specific parameters (other than length) of the flaw which relate to the specific nondestructive evaluation technique. In order to isolate those crack parameters which influence crack detectability, the origins of flaw sensitivity were examined.

For X-ray inspection, the flaw-depth-to-thickness ratio is commonly called X-ray sensitivity (Reference 4). For penetrant inspection, flaw detection is dependent on the visibility of the fluorescense against the test specimen background. The brightness of the indication is the controlling factor and is proportional to the amount of fluorescent material absorbed by the developer. Although the proper flaw parameter for penetrant would appear to be crack volume, crack area was used in this study because the actual crack width information was not available. Since the crack volume equals the crack area times a factor (crack opening), crack area best approximates crack volume for this study.

For both eddy current and ultrasonic inspection methods, a gated signal is used. For eddy current, signal response is proportional to crack depth while for ultrasonic, signal response is proportional to crack area.

STATISTICAL MODEL

An analysis of inspection data must be founded on sound statistical methods. The approach in this study was to treat the detection as a binomial process. The results are analyzed to determine the minimum flaw size for which an established flaw detection probability can be demonstrated at an established test confidence level by each operator. These minimum flaw sizes for each operator are assumed to be normally distributed; and by assuming an appropriate confidence level, a minimum detectable flaw size may be established for each technique.

STATISTICAL APPROACH

The data is binomial in that each flaw is either detected or it is not detected. This process can be approximated with the normal distribution, the binomial distribution, or Poisson's distribution. Because it is the most conservative for this study, the Poisson approximation was employed.

The approach was one of hypothesis testing, the hypothesis being that for a given test population, the probability of detection is equal to or greater than some fixed value. Two values were considered for this study, 0.90 and 0.95. The 0.90 or 0.95 probability of detection refers to the fraction of flaws detected. The confidence of the test was established at 95 percent. The 95-percent test confidence indicates that 95 percent of the time, the probability of detection will be greater than the first figure, 0.90 or 0.95. The problem required determining, for a given number of misses, the minimum number of samples for which the condition can hold.

The computer program used to generate these Poisson numbers is given in Appendix B. For any sample group which met these conditions, the hypothesis held. The sample size had to be larger than that calculated for the Poisson number (N). But the sample group selected had to be representative of the infinite population (randomly selected). The subgroup chosen for testing was random in that sorting does not affect the basic underlying population, provided the proper sorting parameter is employed.

SORTED GROUP ASCENT METHOD

The sorted group ascent method was devised in order to determine a subset of flaws, characterized by a flaw size, which met set values of test confidence and probability of detection. Starting at the bottom of a sorted list, the largest consecutive subset is determined which meets the Poisson size requirement for the number of misses encountered. The smallest value of the sorted flaw size completely contained with this subset characterizes the subset and can be reasonably called the flaw sensitivity limit. This value was determined for each operator, for every technique, and for all the flaw parameter sorts.

OPERATOR VARIABILITY

For any technique or operator, an average value and the standard deviation corrected for the finite sample size by the Student t value can be determined. By adding two standard deviations to the average value, a flaw sensitivity value is obtained that has 95-percent confidence over the grouping selected. It follows then to discuss and consider the 0.90/95-percent/95-percent and a 0.95/95-percent/95-percent flaw sensitivity limit. The last 95 percent indicates the operator dependence, signifying that

95 percent of the operators will be able to meet the 0.90/95-percent or 0.95/95-percent inspection requirement.

Because the operators, techniques, or grouping is randomly selected, homogeneous, and representative of a larger population, this flaw sensitivity limit becomes a measure of flaw sensitivity for the larger population. A great amount of operator dependence is indicated in the results by the large values of estimated deviations. These large deviations take into account the fact that many variables exist.

An evaluation of the 0.90/95-percent/95-percent and 0.95/95-percent/95-percent limits for the data of this study is shown in Tables 5 through 12. It is logical to think in terms of 95-percent test confidence and 95-percent operator confidence because these figures represent the two-sigma limit, a commonly used value for process control and other quality control statistics. The probability-of-detection value should be selected near the bend in the top part of the S-curve. The larger the value at which the fraction can be chosen, the more reliable the inspection process will be and the more confidence the inspection will generate. The interpretation of the 0.90/95-percent/95-percent and 0.95/95-percent/95-percent statistical model is illustrated in Figure 20.

In order to achieve a high level of confidence in statistical hypothesis testing, such as this study used, a large sample size is necessary. The results may be acceptance, rejection, or nondetermination. In the case of nondetermination, a flaw sensitivity limit can normally be calculated at a slightly lower probability-of-detection level. Since the plot of probability of detection versus flaw sensitivity limit is very close to a straight line on probability graph paper, this value can be extrapolated to higher probability-of-detection values. This technique has a sound basis and maximizes the usage of data. The extrapolated values are identified with asterisks in Tables 5 through 12.

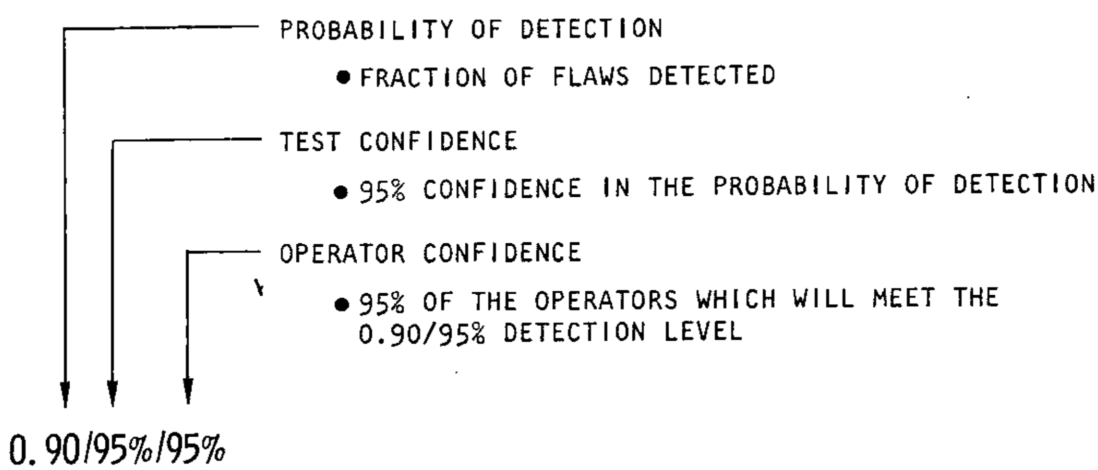


Figure 20. Statistical Model

Table 5. Flaw Sensitivity Analysis: 0.90/95%/95%—X-Ray—Depth-to-Thickness Ratio

Operator	Flaw Sensitivity Limit at 0.90/95% Depth-to-Thickness Ratio	Difference Between Operator Limit and Average	Square of Difference
A	0.53	0.077	0.00593
B	0.64*	0.033	0.00109
C	0.66*	0.053	0.00281
D	0.59*	0.017	0.00029
E	0.65*	0.043	0.00185
F	0.60*	0.007	0.00005
G	0.58*	0.027	0.00073
	7 ⌊4.25		7 ⌊0.01275

Operator average 0.607 Squared difference average 0.00182

Estimated standard deviation among operators: $s = \sqrt{0.00182} = 0.043$

For a sample size of 7 (6 degrees of freedom), the $t\ 0.95 = 1.94$ (Student t distribution).

Then the 0.90/95%/95% flaw sensitivity limit is: $(a/t)\ \text{X-ray} = 0.607 + 1.94\ (\sqrt{7/6})\ (0.043)$

$(a/t)\ \text{X-ray} = 0.70\ \ (70\%)$

Table 6. Flaw Sensitivity Analysis: 0.95/95%/95%—X-Ray—Depth-to-Thickness Ratio

Operator	Flaw Sensitivity Limit at 0.95/95% Depth-to-Thickness Ratio	Difference Between Operator Limit and Average	Square of Difference
A	0.61*	0.071	0.00504
B	0.72*	0.039	0.00152
C	0.73*	0.049	0.00240
D	0.66*	0.021	0.00044
E	0.73*	0.049	0.00240
F	0.67*	0.011	0.00012
G	0.65*	0.031	0.00096
	7 | 4.77		7 | 0.01288
Operator average	0.681	Squared difference average	0.00184

Estimated standard deviation among operators: $s = \sqrt{0.00184} = 0.043$

For a sample size of 7 (6 degrees of freedom), the $t\,0.95 = 1.94$ (Student t distribution).

Then the 0.95/95%/95% flaw sensitivity limit is: $(a/t)\ \text{X-ray} = 0.681 + (1.94)(\sqrt{7/6})\ 0.043$

$(a/t)\ \text{X-ray} = 0.77\ (77\%)$

Table 7. Flaw Sensitivity Analysis: 0.90/95%/95%—Penetrant—Crack Area

Operator	Flaw Sensitivity Limit at 0.90%/95% Area in Square Inches	Difference Between Operator Limit and Average	Square of Difference
H	0.0002	0.00121	146×10^{-8}
I	0.0013	0.00011	1×10^{-8}
J	0.0015	0.00009	1×10^{-8}
K	0.0002	0.00121	146×10^{-8}
L	0.0030*	0.00159	253×10^{-8}
M	0.0003	0.00111	123×10^{-8}
N	0.0034	0.00199	396×10^{-8}
	7 | 0.0099		7 | 1066×10^{-8}

Operator average 0.00141 Squared difference average 152.3×10^{-8}

Estimated standard deviation among operators: $s = \sqrt{152.3 \times 10^{-8}} = 0.0039$

For a sample size of 7 (6 degrees of freedom), the t 0.95 = 1.94 (Student t distribution).

Then the 0.90/95%/95% flaw sensitivity limit is: $A_{pen} = 0.00142 + 1.94\,(\sqrt{7/6})\,(0.0039)$

$A_{pen} = 0.0096$ square inches (6.2 square millimeters)

Table 8. Flaw Sensitivity Analysis: 0.95/95%/95%—Penetrant—Crack Area

Operator	Flaw Sensitivity Limit at 0.95/95% Area in Square Inches	Difference Between Operator Limit and Average	Square of Difference
H	0.0040	0.00551	3036×10^{-8}
I	0.0028	0.00671	4502×10^{-8}
J	0.0120	0.00249	620×10^{-8}
K	0.0002	0.00931	8668×10^{-8}
L	0.0060*	0.00351	1232×10^{-8}
M	0.0064	0.00311	967×10^{-8}
N	0.0352	0.02569	65997×10^{-8}
	7 | 0.0666		7 | 85023×10^{-8}
Operator average	0.00951	Squared difference average	12146×10^{-8}

Estimated standard deviation among operators: $s = \sqrt{12,146 \times 10^{-8}} = 0.0110$

For a sample size of 7 (6 degrees of freedom), the t 0.95 = 1.94 (Student t distribution).

Then the 0.95/95%/95% flaw sensitivity limit is: $A_{pen} = 0.00952 + 1.94 (\sqrt{7/6}) (0.0110)$

$A_{pen} = 0.012$ square inches (7.7 square millimeters)

Table 9. Flaw Sensitivity Analysis: 0.90/95%/95%—Ultrasonics—Crack Area

Operator	Flaw Sensitivity Limit at 0.90/95% Area in Square Inches	Difference Between Operator Limit and Average	Square of Difference
O	0.0030	0.00076	58×10^{-8}
P	0.0002	0.00204	416×10^{-8}
Q	0.0057	0.00346	1197×10^{-8}
R	0.0020*	0.00024	6×10^{-8}
S	0.0003	0.00194	376×10^{-8}
	5 | 0.0112		5 | 2053×10^{-8}
Operator average	0.00224	Squared difference average	411×10^{-8}

Estimated standard deviation among operators: $s = \sqrt{411 \times 10^{-8}} = 0.00204$

For a sample size of 5 (4 degrees of freedom), the $t_{0.95} = 2.13$ (Student t distribution).

Then the 0.90/95%/95% flaw sensitivity limit is: $A_{u/s} = 0.00224 + 2.13\,(\sqrt{5/4})\,(0.00204)$

$A_{u/s} = 0.0071$ square inches (4.6 square millimeters)

2C = .132

Table 10. Flaw Sensitivity Analysis: 0.95/95%/95%—Ultrasonics—Crack Area

Operator	Flaw Sensitivity Limit at 0.95/95% Area in Square Inches	Difference Between Operator Limit and Average	Square of Difference
O	0.0055*	0.0014	196×10^{-8}
P	0.0002	0.0067	4480×10^{-8}
Q	0.0090*	0.0021	441×10^{-8}
R	0.0041*	0.0028	784×10^{-8}
S	0.0157	0.0088	7744×10^{-8}
	5 | 0.0345		5 | 13654×10^{-8}

Operator average 0.0069 — Squared difference average 2731×10^{-8}

Estimated standard deviation among operators: $s = \sqrt{2731 \times 10^{-8}} = 0.00522$

For a sample size of 5 (4 degrees of freedom), the t 0.95 = 2.13 (Student t distribution).

Then the 0.95/95%/95% flaw sensitivity limit is: $A_{u/s} = 0.0069 + 2.13 \left(\sqrt{5/4}\right)(0.0052)$

$A_{u/s} = 0.018$ square inches (12 square millimeters)

Table 11. Flaw Sensitivity Analysis: 0.90/95%/95%—Eddy Current—Crack Depth

Operator	Flaw Sensitivity Limit at 0.90/95% Crack Depth in Inches	Difference Between Operator Limit and Average	Square of Difference
T	0.017	0.0036	13.0×10^{-6}
U	0.010	0.0106	112.4×10^{-6}
V	0.032*	0.0114	130.0×10^{-6}
W	0.023	0.0024	5.8×10^{-6}
X	0.021	0.0004	0.2×10^{-6}
	5 | 0.103		5 | 261.2×10^{-6}
Operator average	0.0206	Squared difference average	52.2×10^{-6}

Estimated standard deviation among operators: $s = \sqrt{52.2 \times 10^{-6}} = 0.0072$

For a sample size of 5 (4 degrees of freedom), the t 0.95 = 2.13 (Student t distribution).

Then the 0.90/95%/95% flaw sensitivity limit is: $A_{e/c} = 0.0206 + 2.13\,(\sqrt{5/4})\,(0.0072)$

$A_{e/c} = 0.038$ inch deep (0.96 millimeters)

Table 12. Flaw Sensitivity Analysis: 0.95/95%/95%—Eddy Current—Crack Depth

Operator	Flaw Sensitivity Limit at 0.95/95% Crack Depth in Inches	Difference Between Operator Limit and Average	Square of Difference
T	0.026	0.0034	11.6×10^{-6}
U	0.019	0.0104	108.2×10^{-6}
V	0.040*	0.0106	112.4×10^{-6}
W	0.033*	0.0036	13.0×10^{-6}
X	0.029	0.0004	0.2×10^{-6}
	5 | 0.147		5 | 245.2×10^{-6}
Operator average	0.0294	Squared difference average	49.0×10^{-6}

Estimated standard deviation among operators: $s = \sqrt{49.0 \times 10^{-6}} = 0.0070$

For a sample size of 5 (4 degrees of freedom), the t 0.95 = 2.13 (Student t distribution).

Then the 0.95/95%/95% flaw sensitivity limit is: $A_{e/c} = 0.0294 + 2.13\ (\sqrt{5/4})\ (0.0070)$

$A_{e/c} = 0.046$ inch deep (1.16 millimeters)

VI. CONCLUSIONS

Within the limitations of this study, crack detection sensitivities have been derived for the four nondestructive testing techniques. Fatigue cracks greater in size than the detection levels shown below can be maintained at the appropriate probability of detection (or greater) with 95-percent confidence.

All Operators (95% Confidence)

	0.90	0.95
X-radiography (crack-depth-to-material-thickness ratio)	70%	77%
Fluorescent penetrant (crack area)	0.0096 in.^{2}	0.012 in.^{2}
Ultrasonics (crack area)	0.0071 in.^{2}	0.018 in.^{2}
Eddy current (crack depth)	0.038 in.	0.046 in.

The fact that X-radiography was by far the least sensitive of the techniques examined came as no surprise, since radiography alone is not generally used for detection of fatigue cracks.

Operator variability appears to be one of the most significant factors in establishing flaw sensitivity limits. It can be shown that under certain conditions (best operator), the flaw sensitivity limits are much smaller than those which generally occur (all operators).

Best Operator

	0.90	0.95
X-radiography (crack-depth-to-material-thickness ratio)	53%	61%
Fluorescent penetrant (crack area)	0.0002 in.^{2}	0.0002 in.^{2}
Ultrasonics (crack area)	0.0002 in.^{2}	0.0002 in.^{2}
Eddy current (crack depth)	0.010 in.	0.019 in.

The 0.0002-square-inch area limit is the lower limit of the available data in this study. A larger population of smaller crack sizes than were available would be necessary to reflect a detection-level change between the 0.90 and 0.95 probability of detection.

These data support the concepts of certifying personnel for specific structures and techniques, establishing operator certification levels for NDT discipline competence, and developing specific detailed instructions for critical parts which must be inspected at unusually high sensitivity levels.

Space Division
Rockwell International

VII. REFERENCES AND BIBLIOGRAPHY

REFERENCES

1. Space Shuttle Orbiter Fracture Control Plan. Space Division, Rockwell International Corporation, SD 73-SH-0082 (March 1973).

2. Rummel, W.D., Todd, P.H., Frecska, S.A., and Tathke, R.A. The Detection of Fatigue Cracks by Nondestructive Test Methods. Martin Marietta Aerospace, MCR 73-145 (June 1973).

3. Anderson, R.T., De Lacy, T.J., and Stewart, R.C. Detection of Fatigue Cracks by Nondestructive Testing Methods. Convair, GDCA-DBG 73-002 (March 1973).

4. "Metallography; Nondestructive Testing; Radioisotopes and Radiation Effects; Industrial Chemicals; Emission, Absorption, and Mass Spectroscopy." ASTM Standard, Part 31 (1965).

5. Ruescher, E.H. "The Influence of Some X-Ray Parameters on Crack Detection Capability," Materials Evaluation (August 1973).

BIBLIOGRAPHY

Dixon, W.J. and Massey, Jr., F.J. Introduction to Statistical Analysis. New York: McGraw-Hill Book Company, Inc. (1957).

Guenther, W.C. Concepts of Statistical Inference. New York: McGraw-Hill Book Company, Inc. (1965).

McMaster, R.C. Nondestructive Testing Handbook. New York: Ronald Press (1963).

Pearson, H.S. Critical Crack Size Compared with NDT Capability. Pratt and Whitney Aircraft, GP 73-71 (15 July 1973).

Treman, S.M. Space Shuttle Orbiter Fracture Control Plan. Space Division, Rockwell International Corporation, SD 73-SH-0082 (March 1973).

Westrup, R.W. Establishment of Design Criteria for Acceptable Failure Modes and Fail Safe Considerations for the Space Shuttle Structural System. Space Division, Rockwell International Corporation, SD 73-SH-0046 (1 June 1972).

APPENDIX A. CONSOLIDATED INSPECTION RESULTS

The tab runs list the consolidated inspection results of the three companies—Rockwell International, Convair, and Martin Marietta—for a total of seven X-ray, seven penetrant, five ultrasonic, and five eddy current inspectors. The data under each column represent the following information.

SAMPLE NUMBER - The listed numbers and letters are used for test specimen identification only. Prefix letters identify the manufacturer, and suffix letters represent the side of specimens which contained flaws on two surfaces.

THICK - The numbers represent the actual thickness of each specimen in inches.

FINISH - The listed numbers represent the RMS finish in microinches.

LOCATION - The letters represent horizontal grid, and the number is the vertical grid location of each flaw in the test specimen. The use of a double letter, such as CD 13, indicates that the flaw crosses a grid zone line and is located partially in two adjacent 1/2-inch grid zones. Single letters and numbers indicate that the flaws are located entirely within one of the 1/2-inch grid location blocks.

INCLD ANGLE - The numbers represent the angle in degrees between the assumed flaw plane and the direction of the radiation beam during radiographic inspection at Rockwell only. The flaw angles were assumed to be at a 90-degree angle to the specimen surface. The included angle was determined in order to investigate the slope of the X-ray sensitivity curve. Cursory analysis indicated that the probability of detection was indeed a function of included angle; however, the data was insufficient to reconcile the response curve completely so that it would approximate a Heaviside function as the other techniques do. Reference 5 investigates the effect of included angle more completely.

LENGTH (2c) - Flaw lengths determined from the destructive tests are in inches.

DEPTH (a) - Flaw depth determined from destructive tests is in inches.

AREA - The figures represent the calculated flaw area in square inches, computed from the length and depth measurements with the assumption that the shape of the flaw is elliptical.

A/2c - The numbers represent the decimal equivalent of the flaw aspect ratio, the depth of the flaw divided by the length.

A/T - The percentage figures listed are the relationship of the flaw depth to the thickness of the specimen, flaw depth divided by material thickness times 100.

X-RAY-PENETRANT-ULTRASONIC-E/C - Each inspector is identified with a letter A through X. Detection of a given flaw is indicated by the appearance of the operator's identifying code letter under the applicable technique. If the flaw was not detected, the space for the operator letter is blank.

ROCKWELL INTERNATIONAL
SPACE DIVISION
NONDESTRUCTIVE EVALUATION TECHNOLOGY GROUP
DEPARTMENT 044-130 QUALITY ENGINEERING
FLAW SENSITIVITY EVALUATION

SORTED BY SPECIMEN NUMBER

SAMPLE NUMBER	THICK	FINISH	LOCATION	INCLD ANGLE	LENGTH (2C)	DEPTH (A)	AREA	A/2C	A/T	X-RAY							PENETRANT							ULTRASONIC					E/C				
										A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
A002	.059	30	CD13	3.6	.068	.C16	.0C09	.235	27%								H	I		K	L	M			P	Q	R	S		U	V		X
A003	.054	32	BC8	2.4	.318	.C36	.CC90	.113	66%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
A003	.054	32	EF11	5.9	.027	.CC5	.0C01	.165	9%																								
A004	.063	30	DE9	3.6	.34C	.032	.0C85	.094	50%	A	B	C	D				H	I	J	K				O	P				T	U			
A004	.063	30	EF6	0.0	.022	.CC7	.0C01	.318	11%					E	F	G					L	M	N			Q	R	S			V	W	X
A004	.063	30	BC12	4.8	.111	.034	.0030	.306	53%	A		C					H	I	J	K	L	M	N	O	P	Q	R	S	T	U		W	X
A005	.063	32	CD11	5.9	.384	.C46	.0139	.120	73%	A	B	C	D		F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
A005	.063	32	FG4	2.4	.085	.C24	.0C16	.282	38%								H	I	J	K	L	M	N		P	Q	R	S	T	U	V	W	X
A005	.063	32	BC2	4.8	.075	.C21	.0C12	.280	33%								H		J		L	M	N			Q	R	S	T	U	V		X
A005	.063	32	EF7	1.2	.094	.C27	.0C20	.287	42%						F		H	I	J	K	L	M	N		P	Q	R	S	T	U	V	W	X
A006	.062	32	DE11	5.9	.37C	.C48	.0139	.130	77%	A	B	C	D		F	G	H	I	J	K		M	N	O	P	Q	R	S	T	U	V	W	X
A006	.062	32	DE8	2.4	.081	.C19	.0012	.235	30%													M			P	Q	R	S		U	V		X
A006	.062	32	CD6	0.0	.37C	.C46	.0134	.124	74%	A	B	C	D	E	F	G	H	I	J	K		M	N	O	P	Q	R	S	T	U	V	W	X
A006	.062	32	EF13	3.6	.067	.C24	.0013	.358	38%					E					J	K		M	N		P	Q	R	S		U	V	W	X
A006	.062	32	FG3	3.6	.129	.C4C	.0041	.310	64%	A		C				G	H	I	J	K		M	N	O	P	Q	R	S		U	V	W	X
A008	.059	60	EF8	2.4	.08C	.C22	.0014	.275	37%								H	I	J	K	L	M	N		P	Q	R	S	T	U	V	W	X
A009	.059	60	CD10	4.8	.09C	.C24	.0C17	.267	40%								H		J	K	L	M	N		P	Q	R	S	T	U		W	X
A009	.059	60	EF5	1.2	.073	.C22	.0C13	.301	37%								H		J	K	L	M			P	Q	R	S	T	U	V	W	X
A010	.060	60	BC15	1.2	.078	.C21	.0013	.269	35%	A	B		D				H	I	J	K	L	M	N		P	Q	R	S	T	U		W	X
A010	.060	60	CD8	2.4	.362	.C46	.0131	.127	76%	A	B	C	D	E			H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
A010	.060	60	EF3	3.6	.075	.C23	.0014	.307	38%								H	I	J	K	L	M	N		P	Q	R	S	T	U	V	W	X
A011	.062	60	CD9	3.6	.362	.C44	.0125	.122	70%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
A011	.062	60	EF6	0.0	.352	.C42	.0116	.119	67%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
A011	.062	60	EF13	3.6	.098	.C36	.0C28	.367	58%	A							H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
A011	.062	60	BC15	1.2	.086	.C29	.0C20	.337	46%								H		J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
A012	.056	60	EF9	3.6	.069	.C15	.0C08	.217	26%							G						M			P	Q		S	T	U	V	W	X
A012	.056	60	DE6	0.0	.062	.C13	.0C06	.210	23%												L	M			P				T	U		W	X
A012	.056	60	CD7	1.2	.34C	.C36	.0096	.106	64%	A	B	C	D			G	H	I	J	K		M	N	O	P	Q	R	S	T	U	V	W	X
A012	.056	60	DE11	5.9	.296	.C26	.0060	.088	46%	A	B	C	D	E		G	H	I	J	K		M	N	O	P	Q	R	S	T	U		W	X
A014	.064	125	CD14	2.4	.342	.C44	.0118	.129	68%	A	B	C	D	E	F	G	H	I		K	L	M	N		P	Q	R	S	T	U	V	W	X
A015	.059	125	EF5	1.2	.C59	.C15	.0CC7	.254	25%												L	M				Q	R	S	T	U	V		
A016	.058	125	EF10	4.8	.29C	.C36	.0082	.124	62%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U		W	X
A016	.058	125	DE7	1.2	.288	.C34	.0077	.118	58%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
A016	.058	125	BC3	3.6	.034	.CC7	.0C02	.206	12%																								
A017	.061	130	EF7	1.2	.065	.C17	.0C09	.262	27%													M				Q	R	S		U	V	W	X
A017	.061	130	BC15	1.2	.089	.022	.0C15	.247	36%								H	I	J	K		M			P	Q	R	S		U	V	W	X
A017	.061	130	EF3	3.6	.096	.C25	.0C19	.260	40%								H	I	J	K		M			P	Q	R	S		U	V	W	X
A017	.061	130	DE11	5.9	.064	.C13	.0007	.203	21%													M				Q	R	S		U		W	X
A018	.061	130	CD9	3.6	.372	.C46	.0134	.124	75%	A	B	C	D		F	G		I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
A018	.061	130	CD12	4.8	.326	.C44	.0113	.135	72%	A	B	C	D	E		G		I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X

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FLAW SENSITIVITY EVALUATION (CONT)

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A018	.061	130	CD2	4.8	.123	.036	.0035	.293	59%	A D	I L M N	O P Q R S	T U V W X
A018	.061	130	FG7	1.2	.055	.014	.0006	.255	22%		I L M N	Q R S	U V W X
A018	.061	130	FG2	4.8	.081	.026	.0017	.321	42%		I L M N	P Q R S	T U V W X
A020	.060	230	CD14	2.4	.085	.019	.0013	.224	31%	F	H I L M N	P Q R S	T U V W X
A021	.051	230	EF8	2.4	.197	.012	.0019	.061	23%	A D E F G	H K L M N	P Q R S	T U V W X
A022	.061	230	BC13	3.6	.069	.021	.0011	.304	34%		I J K	P Q R S	T U
A022	.061	230	EF7	1.2	.356	.054	.0151	.152	88%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
A022	.061	230	FG3	3.6	.085	.029	.0019	.341	47%		H I J K L M N	P Q R S	T U V W X
A023	.059	230	FG3	3.6	.048	.008	.0003	.167	13%				
A023	.059	230	CD10	4.8	.372	.046	.0134	.124	77%	A B C D	H I J K	O P	T U
A023	.059	230	CD5	1.2	.069	.018	.0010	.261	30%		H J K L M N		U V W X
A023	.059	230	DE15	1.2	.089	.020	.0014	.225	33%		H I J K L M N	P	T U V W X
A024	.057	230	BC2	4.8	.084	.021	.0014	.250	36%		N	P Q R S	T U V
A024	.057	230	FG7	1.2	.104	.021	.0017	.202	36%	A	H K M N	P Q R S	T U V W X
A024	.057	230	CD12	4.8	.334	.040	.0105	.120	70%	A B C D	H I J K M N	O P Q R	T U V W X
A024	.057	230	DE9	3.6	.352	.042	.0116	.119	73%	A B C D G	H I J K M N	O P Q R S	T U V W X
A024	.057	230	BC7	1.2	.064	.014	.0007	.219	24%		K M N	P Q R S	T U
B002	.225	32	BC10	4.8	.145	.053	.0060	.366	23%		H I J K L N	O P Q R S	T U V W X
B003	.223	32	DE9	3.6	.144	.052	.0059	.361	23%	G	H J K L N	O P S	T U
B003	.223	32	BC11	5.9	.526	.106	.0438	.202	47%	A B C D F	H I J K L M N	O P Q R S	T U V X
B004	.211	32	DE5	1.2	.478	.128	.0480	.268	60%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B004	.211	32	BC14	2.4	.116	.030	.0027	.259	14%		H J K L M N	P Q R S	T U X
B004	.211	32	DE9	3.6	.510	.094	.0376	.184	44%	A B C D E F	H I J K L M N	O P Q R S	T U V W X
B005	.213	32	BC4	2.4	.121	.035	.0033	.289	16%		H I J K M	P Q R S	T U V W X
B005	.213	32	CD9	3.6	.442	.056	.0194	.127	26%	A B C D E G	H I J K M N	O P Q R S	T U V X
B005	.213	32	DE13	3.6	.506	.092	.0365	.182	43%	A B C D	H I J K L M N	O P Q R S	T U V X
B005	.213	32	EF7	1.2	.482	.136	.0515	.282	63%	A B C D E F G	H I J K L M N	O P Q R S	T U V X
B006	.211	32	BC3	3.6	.124	.034	.0033	.274	16%		K L M	O P Q R S	T U V W X
B006	.211	32	CD7	1.2	.492	.130	.0502	.264	61%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B006	.211	32	EF9	3.6	.474	.128	.0476	.270	60%	A B C D E F G	H I J K L M N	O P Q R S	T U X
B006	.211	32	FG13	3.6	.524	.092	.0378	.176	43%	A B C D G	H I J K L M N	O P Q R S	T U V X
B006	.211	32	EF5	1.2	.508	.092	.0367	.181	43%	A B C D E F	H I J K L M N	O P Q R S	T U V W X
B008	.226	60	DE7	1.2	.520	.114	.0465	.219	50%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B009	.223	60	CD8	2.4	.460	.064	.0231	.139	28%	A B C D G	H I J K L M N	O P Q R S	T U V W X
B009	.223	60	EF10	4.8	.478	.080	.0300	.167	35%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B010	.224	60	FG13	3.6	.137	.048	.0052	.350	21%		H I J K L M N	P Q R S	T U V W X
B010	.224	60	CD8	2.4	.550	.110	.0475	.200	49%	A B C D E F G	H I J K M N	O P Q R S	T U V W X
B010	.224	60	EF4	2.4	.135	.045	.0048	.333	20%		H I K M N	P Q R S	T U V W X
B011	.224	60	DE10	4.8	.144	.050	.0057	.347	22%	E F G	H I J K L M N	O P Q R S	T U V W X
B011	.224	60	CD5	1.2	.530	.108	.0449	.204	48%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B011	.224	60	BC11	5.9	.496	.116	.0452	.234	51%	A B C D	H I J K L M N	O P Q R S	T U V W X
B011	.224	60	EF13	3.6	.512	.104	.0418	.203	46%	A B C D	H I J K M N	O P Q R S	T U W X
B012	.221	60	DE9	3.6	.530	.106	.0441	.200	47%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B012	.221	60	BC14	2.4	.124	.038	.0037	.306	17%		H I J K L M N	P Q R S	U V W X
B012	.221	60	EF6	0.0	.478	.126	.0473	.264	57%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B012	.221	60	CD3	3.6	.534	.108	.0453	.202	48%	A B C D G	H I J K L M N	O P Q R S	T U V W X
B012	.221	60	EF11	5.9	.143	.043	.0048	.301	19%		H I J K L M	P Q R S	T U V W X
B014	.221	130	DE7	1.2	.522	.108	.0443	.207	48%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B015	.225	125	BC10	4.8	.149	.054	.0063	.362	23%		H I J K N	O P Q R S	T U V W X
B015	.225	125	EF7	1.2	.490	.144	.0554	.294	63%	A B C D E F G	H I J K M N	O P Q R S	T U V W
B016	.225	130	CD4	2.4	.534	.106	.0444	.199	47%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B016	.225	130	DE12	4.8	.520	.106	.0433	.204	47%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B016	.225	130	DE9	3.6	.140	.053	.0058	.379	23%		H I J K M	O P Q R S	T U V X
B017	.212	130	CD8	2.4	.474	.114	.0424	.241	53%	A B C D E F G	H I J K M N	O P Q R S	T U V W X
B017	.212	130	CD14	2.4	.143	.043	.0048	.301	20%	G	J K M	P Q R S	T U X
B017	.212	130	FG10	4.8	.123	.033	.0032	.268	15%		H I J K L M N	O P Q R S	T U V W X
B017	.212	130	EF5	1.2	.426	.054	.0181	.127	25%		H I J K L M N	O P Q R S	T U V W X

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY SPECIMEN NUMBER

B018	.210	130	FG9	3.6	.458	.C90	.0324	.197	42%	A B C D E G	H I J K L M N	O P Q R S	T U V X
B018	.210	130	BC4	2.4	.134	.C37	.0C39	.276	17%		J K M	O P S	T U V W X
B018	.210	130	BC7	1.2	.458	.C84	.0302	.183	39%	A B C D	H I J K L M N	O P Q R S	T U V W X
B018	.210	130	CD16	0.0	.498	.C88	.0344	.177	41%	A B D	H I J K L M	P Q R S	T U V W X
B020	.226	230	EF7	1.2	.478	.C86	.0323	.180	38%	A B C D E G	H I J K L M N	O P Q R S	T U V W X
B021	.227	230	DE9	3.6	.144	.C55	.0062	.382	24%		H I J K L M N	O P S	T U V W X
B021	.227	230	FG6	0.0	.538	.112	.0473	.208	49%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B022	.212	230	FG8	2.4	.466	.096	.0351	.206	45%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B022	.212	230	BC13	3.6	.506	.094	.0373	.186	44%	A B C D F G	H I J K L M N	O P Q R S	T U V W X
B022	.212	230	CD4	2.4	.444	.080	.0279	.180	37%	A B C D	H I J K L M N	O P Q R S	T U V W X
B023	.227	230	BC11	5.9	.470	.C98	.0362	.209	43%	A B C D E	H I J K M N	O P Q R S	T U V W X
B023	.227	230	DE5	1.2	.534	.110	.0461	.206	48%	A B C D G	H I J K M N	O P Q R S	T U V W X
B023	.227	230	EF14	2.4	.157	.C58	.0071	.369	25%		H I J K M N	O P Q R S	T U V W X
B023	.227	230	DE10	4.8	.19C	.C64	.0095	.337	28%		H I J K M N	O P Q R S	T U V W X
B024	.211	230	BC3	3.6	.109	.027	.0023	.248	12%		H J K L M N	Q R S	T U V W X
B024	.211	230	EF10	4.8	.504	.C94	.0372	.187	44%	A B C D E	H I J K L M N	O P Q R S	T U V W X
B024	.211	230	DE6	0.0	.472	.124	.0459	.263	58%	A B C D E F G	H I J K M N	O P Q R S	T U V W X
B024	.211	230	BC13	3.6	.512	.09C	.0362	.176	42%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B024	.211	230	FG3	3.6	.118	.C31	.0C29	.263	14%		H J K L M	P Q R S	T U V W X
C001B	.052	085	D6	0.0	.279	.038	.0C83	.136	73%	A B E F G	H I J K L M N	O P Q R S	T U V W X
C001A	.052	085	D11	5.9	.242	.C25	.0047	.103	48%	A B C E F G	H I J K L M	O P Q R	T U W X
C001B	.052	085	D18	2.4	.269	.C39	.0C82	.145	75%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C002A	.058	60	EF11	5.9	.067	.C14	.0007	.209	24%	F G	H I J K L M N	O P R S	U W X
C002A	.058	60	E7	1.2	.06C	.026	.0012	.433	44%	F	H I J K L M N	O P Q R S	T U V W X
C002A	.058	60	EF9	3.6	.082	.C32	.0021	.390	55%	B C E F G	H I J K L M N	O P Q R S	T U V W X
C003B	.059	45	D14	2.4	.074	.C15	.0CC9	.203	25%	E	H I J K L M N	O P Q R S	T U W X
C003B	.059	45	D10	4.8	.058	.C11	.0C05	.190	18%	G	H I J K L M N	O P Q R S	U W
C003A	.059	45	EF12	4.8	.079	.C11	.0007	.139	18%	A B E G	H J K L M N	P Q R S	T U V W X
C003A	.059	45	EF9	3.6	.082	.C20	.0013	.244	33%	E F G	H I J K L M N	P Q R S	T U V W X
C004B	.060	45	F9	3.6	.C83	.C29	.0C19	.349	48%	A B C E F G	H I J K L M N	O P Q R S	T U V W X
C005A	.061	45	C6	0.0	.247	.C36	.0070	.146	59%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C005A	.061	45	C10	4.8	.258	.C35	.0071	.136	57%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C005B	.061	45	E14	2.4	.247	.C43	.0C83	.174	70%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C006A	.059	55	BC10	4.8	.150	.C28	.0C33	.187	47%	A B C D	H I K	O P	T U
C006A	.059	55	E9	3.6	.084	.02C	.0013	.238	33%		H I K	P	T U
C007A	.059	50	BC11	5.9	.06C	.C26	.0012	.433	44%	A E F G	H K L M N	O P Q R S	T U W
C007A	.059	50	C8	2.4	.067	.C27	.0C14	.403	45%		H K L M N	O P Q R S	T U V W X
C007A	.059	50	EF7	1.2	.C87	.C18	.0012	.207	30%	C F G	H K L M N	O P Q R S	T U V W X
C008A	.058	50	D6	0.0	.259	.C35	.0C71	.135	60%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C008A	.058	50	C14	2.4	.275	.C34	.0C73	.124	58%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C008B	.058	50	C10	4.8	.342	.C41	.0110	.120	70%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C009A	.057	50	CD6	0.0	.066	.024	.0C12	.364	42%	E G	H I J K L M N	O P Q R S	T U V W X
C011A	.062	40	D6	0.0	.044	.CC7	.0002	.159	11%		H I K L M N	O P Q R S	U W
C011A	.062	40	D9	3.6	.065	.C13	.0007	.200	20%		H I J K L M N	O P Q R S	T U V W X
C011A	.062	40	D12	4.8	.062	.C11	.0005	.177	17%	E	H I K L M N	O P Q R S	U V W X
C012A	.062	35	F6	0.0	.077	.C14	.0008	.182	22%	A D	H I K L M N	O P Q R S	T U V W X
C013A	.059	35	E9	3.6	.077	.C14	.0008	.182	23%	B E F G	H I J K L M	O P Q R S	T U V W X
C014A	.061	40	CD15	1.2	.068	.C12	.0006	.176	19%	A D	H I J K L M N	O P Q R S	T U V W
C014A	.061	40	DE12	4.8	.017	.CC3	.0000	.176	4%			O	
C014A	.061	40	F7	1.2	.077	.015	.0009	.195	24%		H I J K L M N	O P Q R S	U V W
C015A	.061	045	D11	5.9	.056	.014	.0006	.250	22%	A D E F G	H I J K N	O P Q R	T U W X
C015B	.061	045	BC13	3.6	.051	.C12	.0005	.235	19%	A F G	H I J K N	P Q R S	T U W X
C015B	.061	045	EF9	3.6	.062	.C13	.0006	.210	21%	F	H I J K N	P Q R S	T U V W X

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FLAW SENSITIVITY EVALUATION (CONT)

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C016A	.059	50	DE13	3.6	.257	.033	.0067	.128	55%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C016A	.059	50	DE5	1.2	.253	.031	.0062	.123	52%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C016A	.059	50	E9	3.6	.248	.030	.0058	.121	50%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C017A	.057	60	B15	1.2	.040	.010	.0003	.250	17%		H K L M N	O P R	V W X
C017A	.057	60	E6	0.0	.069	.026	.0014	.377	45%	E F G	H I K L M N	O P Q R S	T U V W X
C018A	.061	50	D6	0.0	.007	.001	.0000	.143	1%				
C018A	.061	50	C11	5.9	.072	.016	.0009	.222	26%	E F G	H I J K L M	O P Q R S	T U V W
C018A	.061	50	B14	2.4	.025	.003	.0001	.120	4%		I K L	O P R S	
C018B	.061	50	CD13	3.6	.035	.006	.0002	.171	9%	D F	K L M	P Q R S	W
C018B	.061	50	BC14	2.4	.021	.004	.0001	.190	6%		K L	P R S	
C018A	.061	50	B13	3.6	.091	.021	.0015	.231	34%	A D E F G	H I J K L M N	O P Q R S	T U V W X
C019B	.058	60	E10	4.8	.079	.015	.0009	.190	25%	A B C D E F G	H I K L M N	O P Q R S	T U V W X
C019B	.058	60	F7	1.2	.086	.019	.0013	.221	32%	D E F G	H I K L M N	O P Q R S	T U W X
C019B	.058	60	F15	1.2	.083	.015	.0010	.181	25%	A D E F G	H I K L M N	O P Q R S	T U V W X
C019A	.058	60	B8	2.4	.030	.004	.0001	.133	6%	A B	H I K L N	P R S	
C019B	.058	60	E12	4.8	.070	.016	.0009	.229	27%	E F G	H I K L M N	O P Q R S	T U V W
C019A	.058	60	C13	3.6	.086	.017	.0011	.198	29%	A B C D E F G	H I K L M N	P Q R S	T V W X
C020A	.059	40	E7	1.2	.032	.009	.0002	.281	15%		H I K L M	O P Q R S	U
C020A	.059	40	C8	2.4	.085	.033	.0022	.388	55%	A C D E F G	H I J K L M N	O P Q R S	T U V W X
C020A	.059	40	BC11	5.9	.047	.015	.0006	.319	25%	A B C E F G	H I J K L M N	O P Q R S	U V W
C021A	.059	55	C7	1.2	.010	.004	.0000	.400	6%		H J	O	
C021B	.059	55	E10	4.8	.092	.025	.0018	.272	42%	B D E F G	H I J K L M N	O P Q R S	T U V W X
C022B	.057	55	D14	2.4	.241	.032	.0061	.133	56%	A B D E F G	H I J K L M N	O P Q R S	T U V W X
C022B	.057	55	C6	0.0	.287	.038	.0086	.132	66%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C022A	.057	55	C10	4.8	.258	.033	.0067	.128	57%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C025A	.061	45	B10	4.8	.030	.010	.0002	.333	16%		H L M	O P Q R S	
C025A	.061	45	FG12	4.8	.015	.021	.0002	****	34%				
C025A	.061	45	D8	2.4	.079	.018	.0011	.228	29%	A B D F G	H I K L M N	O P Q R S	U V W X
C025A	.061	45	BC14	2.4	.031	.002	.0000	.065	3%		L M	O P Q R S	
C026A	.056	290	C8	2.4	.083	.029	.0019	.349	51%	D E F G	H I K L M N	O P Q R S	T U V W
C027B	.059	50	C7	1.2	.083	.030	.0020	.361	50%	B D E F G	H I J K L M N	O P Q R S	T U V W X
C027A	.059	50	B15	1.2	.048	.013	.0005	.271	22%	E F	H I J K L M N	O P Q R S	U V W
C028A	.059	50	D15	1.2	.032	.008	.0002	.250	13%	D	I J K L M	O P	T
C028B	.059	50	BC11	5.9	.059	.020	.0009	.339	33%	G	H I J K	P Q R	T V W
C028A	.059	50	D7	1.2	.079	.030	.0019	.380	50%	A B E	H I J K L M N	O P Q R S	T U V W X
C029A	.059	120	D10	4.8	.252	.036	.0071	.143	61%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C030A	.060	160	C12	4.8	.061	.011	.0005	.180	18%	G	H I J K L M N	O P Q R S	T U V W X
C030A	.060	160	C6	0.0	.045	.008	.0003	.178	13%		H I J K L M N	O P Q R S	V W
C030A	.060	160	BC13	3.6	.077	.011	.0007	.143	18%	G	H I J K L M N	O P Q R S	T U V W X
C031A	.060	150	E6	0.0	.249	.032	.0063	.129	53%	A D E F G	H I J K L M N	O P Q R S	T U V W X
C031A	.060	150	B14	2.4	.249	.033	.0065	.133	54%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C033A	.059	150	DE14	2.4	.049	.017	.0007	.347	28%		H M N	O Q R	U V W
C033A	.059	150	EF10	4.8	.060	.021	.0010	.350	35%	E	H I J K L M N	O P Q R S	T U W X
C033B	.059	150	CD8	2.4	.062	.024	.0012	.387	40%	A E F G	H I J K L M	O P Q R S	T U V W
C033B	.059	150	BC12	4.8	.076	.028	.0017	.359	47%	A B C F G	H I J K L M	O P Q R S	T U V W
C033A	.059	150	F6	0.0	.082	.031	.0020	.378	52%	D F	H I J K L M N	O P Q R S	T U V W X
C034A	.059	80	BC16	0.0	.062	.024	.0012	.387	40%	A B E F G	H I K L M N	O P Q R S	T U V W
C034A	.059	80	BC8	2.4	.058	.020	.0009	.345	33%	A D F	H I K L M N	O P Q R S	T U W
C034A	.059	80	DE14	2.4	.080	.030	.0019	.375	50%	A B C D E F G	H I K L M N	O P Q R S	T U V W X
C034A	.059	80	EF11	5.9	.070	.027	.0015	.386	45%		H L M N	O P Q R S	T U V W X
C035A	.061	220	D9	3.6	.268	.035	.0074	.131	57%	A B D E F G	H I J K L M N	O P Q R S	T U V W X
C036A	.061	140	BC12	4.8	.073	.017	.0010	.233	27%	A D E F G	H I J K L M N	O P Q R S	T U V W X
C039B	.061	173	D6	0.0	.091	.022	.0016	.242	36%	A D E F G	H I J K L M N	O P Q R S	T U W X
C039B	.061	173	C11	5.9	.063	.013	.0006	.206	21%	B D E F G	H I J K L M N	O P Q R S	T U V W X
C039B	.061	173	D14	2.4	.097	.025	.0019	.258	40%	A D E F G	H I J K L M N	O P Q R S	T U V W X

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FLAW SENSITIVITY EVALUATION (CONT)

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C039B	.061	173	B8	2.4	.067	.C13	.0007	.194	21%	A B E F G H I J K L M N O P Q R S T U W
C039B	.061	173	E9	3.6	.068	.C13	.0007	.191	21%	A E F G H I J K M N O P Q R S T U V W X
C039B	.061	173	F12	4.8	.065	.C11	.0006	.169	18%	H I J K M N O P Q R S T U V W X
C040B	.058	290	CD11	5.9	.086	.031	.0021	.360	53%	A B C D E F G H I J K L M N O P Q R S T U V W X
C041A	.060	260	D7	1.2	.018	.CC3	.0000	.167	5%	O R
C041A	.060	260	CD15	1.2	.08C	.C21	.0C13	.263	35%	F G H I J K L M N O P R S T U V W X
C041A	.060	260	E11	5.9	.015	.CC3	.0C00	.200	5%	R
C042B	.069	55	BC8	2.4	.055	.C1C	.0004	.182	14%	B H I J K L M N O P Q R S V W X
C042B	.069	55	EF13	3.6	.095	.C27	.0C20	.284	39%	B D E F G H I J K L M N P Q R S U V W X
C042A	.069	55	D11	5.9	.011	.CC4	.0000	.364	5%	D H K M N P Q R S T W
C043A	.057	160	DE13	3.6	.258	.C35	.0C71	.136	61%	A B C D E F G H I J K L M N O P Q R S T U V W X
C043A	.057	160	DE5	1.2	.256	.C35	.0C70	.137	61%	A B C D E F G H I J K L M N O P Q R S T U V W X
C043A	.057	160	E9	3.6	.260	.033	.0067	.127	57%	A B C D E F G H I J K L M N O P Q R S T U V W X
C044A	.060	140	BC10	4.8	.026	.C17	.0C03	.654	28%	E F G J L M N P Q R S T V W X
C044A	.060	140	C6	0.0	.025	.CC3	.0001	.120	5%	O
C044B	.060	140	BC12	4.8	.058	.C11	.0005	.190	18%	H L M N O Q R S T W
C044B	.060	140	CD8	2.4	.052	.C11	.0004	.212	18%	D E F H J K L M N O P Q R S V W
C044A	.060	140	B14	2.4	.033	.C17	.0C04	.515	28%	H K M N O P Q R U
C045B	.064	145	EF14	2.4	.067	.01E	.0008	.224	23%	G H I K L M N P Q R S U W X
C045B	.064	145	D9	3.6	.061	.C1C	.0005	.164	15%	E F H I K M N O P Q P S U W
C045B	.064	145	CD7	1.2	.102	.C26	.0021	.255	40%	A B E F H I J K L M N O P Q R S T U V W X
C045A	.064	145	CD12	4.8	.045	.CC7	.0002	.156	10%	G H K L M N O P Q R S W
C045A	.064	145	B6	0.0	.066	.C26	.0C13	.394	40%	I Q
C045A	.064	145	DE14	2.4	.041	.0CE	.0002	.146	9%	E G H I K L M N O P Q R W
C046B	.060	150	E10	4.8	.261	.C33	.0068	.126	54%	A B C D E F G H I J K L M N O P Q R S T U V W X
C046A	.060	150	C14	2.4	.261	.037	.0C76	.142	61%	A B C D E F G H I J K L M N O P Q R S T U V W X
C046A	.060	150	C6	0.0	.257	.C35	.0071	.136	58%	A B C D E F G H I J K L M N O P Q R S T U V W X
C047A	.059	160	DE15	1.2	.047	.C17	.0C06	.362	28%	E H I L M N O P Q R S U V W
C047A	.059	160	E10	4.8	.108	.C33	.0028	.306	55%	A E G H I J K L M N O P Q R S T U V W X
C047B	.059	160	C8	2.4	.036	.C14	.0C04	.389	23%	F H I J K L M N P Q R S U W
C047B	.059	160	B11	5.9	.062	.C21	.0010	.339	35%	E H I J K L M N P Q R S U V W
C047A	.059	160	F7	1.2	.067	.C25	.0C13	.373	42%	A E F H I J K L M N O P Q R S T U V W X
C048A	.059	160	B10	4.8	.045	.C18	.0006	.400	30%	A D G H I J K L M N O P Q R S U V W
C048A	.059	160	EF9	3.6	.026	.C2C	.0004	.769	33%	A E G H I J K L M N O P Q R S U V W X
C048A	.059	160	BC12	4.8	.C85	.C33	.0022	.388	55%	A C D E F G H I J K L M N O P Q R S T U V W X
C048A	.059	160	F12	4.8	.079	.031	.0C19	.392	52%	A E F G H I J K L M N O P Q R S T U V W X
C049A	.061	200	DE14	2.4	.262	.C37	.0C76	.141	60%	A B C D E F G H I J K L M N O P Q R S T U V W X
C049A	.061	200	CD6	0.0	.279	.037	.0C81	.133	60%	A B C E F G H I J K L M N O P Q R S T U V W X
C050B	.063	140	E8	2.4	.096	.021	.0C16	.219	33%	A B F G H I J K L M N O P Q R S T U V W X
C052A	.061	180	BC14	2.4	.090	.C17	.0C12	.189	27%	A B D E F G H I J K L M N O P Q R S T U V W X
C052A	.061	180	EF12	4.8	.041	.CC7	.0002	.171	11%	H I J K M N O P Q R S W X
C052A	.061	180	B9	3.6	.086	.C20	.0C14	.233	32%	A B E F G H I J K L M N O P Q R S T U V W X
C052A	.061	180	CD11	5.9	.C49	.0C6	.0002	.122	9%	H I K M N O P Q R S W X
C052A	.061	180	EF10	4.8	.035	.CC5	.0001	.143	8%	H J K M N O P Q R S W X
C053A	.061	240	B8	2.4	.069	.C15	.0C08	.217	24%	D E F G H I J K L M N O P Q R S U W X
C053A	.061	240	E11	5.9	.021	.CC4	.0C01	.190	6%	G H J K M O P R S
C054B	.061	300	E17	1.2	.063	.C21	.0010	.333	34%	A B C D H I J K L M N O P Q R S T U V W X
C054A	.061	300	CD11	5.9	.020	.CC5	.0001	.250	8%	
C054A	.061	300	B15	1.2	.101	.C37	.0C29	.366	60%	A B C D E F G H I J K L M N O P Q R S T U V W X
C055B	.054	300	B8	2.4	.069	.022	.0C12	.319	40%	D E F G H I J K L M N P Q R S T U V W X
C055A	.054	300	B15	1.2	.041	.C11	.0004	.268	20%	H I J K M O P Q R U W
C055A	.054	300	E7	1.2	.076	.C25	.0015	.329	46%	F G H I J K L M N O P Q R S T U V W X
C056B	.207	40	D10	4.8	.408	.C58	.0186	.142	28%	B E F G H I J K L M N P Q R S T U V W X
C056A	.207	40	D6	0.0	.290	.031	.0071	.107	14%	B E F G H I J K L M N O P Q R T U V W X

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FLAW SENSITIVITY EVALUATION (CONT)

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C056A	.207	40	D14	2.4	.336	.C59	.0156	.176	28%	B F G	H I J K L M N	O P Q R	T U V W X
C057A	.208	35	DE14	2.4	.323	.044	.0112	.136	21%	E F G	H I J K L M N	O P Q R S	T U V W X
C057A	.208	35	EF10	4.8	.362	.C50	.0142	.138	24%	F	H I J K L M N	O P Q R S	T U V W X
C057A	.208	35	E6	0.0	.33C	.C53	.0137	.161	25%	A D E F G	H I J K L M N	O P Q R S	T U V W X
C058A	.208	40	E7	1.2	.326	.C48	.0123	.147	23%	F	H I J K L M N	O P Q R S	T U V W X
C058A	.208	40	DE15	1.2	.31C	.C34	.0C83	.110	16%	D F	I J K L M N	O P Q R S	T U V W X
C058A	.208	40	EF11	5.9	.331	.044	.0114	.133	21%	E F G	H I J K L M N	O P Q R S	T U V W X
C059A	.208	035	C14	2.4	.318	.C52	.0130	.164	25%	A B F	H I J K L M N	O P Q R S	T U V W X
C059A	.208	035	D6	0.0	.345	.C57	.0154	.165	27%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C059B	.208	035	E10	4.8	.313	.C54	.0133	.173	25%	E F G	H I J K L M N	O P Q R S	T U V W X
C060A	.209	60	C14	2.4	.519	.11C	.0448	.212	52%	A B D E F G	H I J K L M N	O P Q R S	T U V W X
C060B	.209	60	E10	4.8	.475	.1C8	.04C3	.227	51%	E F G	H I J K L M N	P Q R S	T U V W X
C060A	.209	60	C6	0.0	.535	.114	.0479	.213	54%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C062B	.210	40	E11	5.9	.539	.115	.0487	.213	54%	A B D E F G	H I J K L M N	O P Q R S	T U V W X
C063A	.212	30	D14	2.4	.34C	.C63	.0168	.185	29%	A B C E F G	H I J K L M N	O P Q R S	T U V W X
C063A	.212	30	C10	4.8	.333	.C63	.0165	.189	29%	D E F G	H I J K L M N	O P Q R S	T U V W X
C063A	.212	30	DE6	0.0	.381	.C76	.0227	.199	35%	A B D F G	H I J K L M N	O P Q R S	T U V W X
C064A	.209	60	B13	3.6	.153	.C54	.0C65	.353	25%	F G	H I J K L M N	O P Q R S	T U V W X
C064A	.209	60	F10	4.8	.125	.04C	.0039	.320	19%	F G	H I J K L N	O P Q R S	T U V W X
C065A	.196	50	BC10	4.8	.119	.04C	.0037	.336	20%	G	H I J K L M N	O P Q R S	T U V W X
C066A	.206	50	C15	1.2	.508	.110	.0439	.217	53%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C066B	.206	50	D11	5.9	.489	.1C7	.0411	.219	51%	A B D E F G	H I J K L M N	O P Q R S	T U V W X
C066A	.206	50	E7	1.2	.459	.1C7	.0386	.233	51%	A B D E F G	H I J K L M N	O P Q R S	T U V W X
C068A	.209	45	C12	4.8	.122	.046	.0044	.377	22%		H I J K L M N	O P R S	T U V W X
C068A	.209	45	B10	4.8	.064	.023	.0012	.359	11%		H I J K L M N	O P R S	T U W X
C068A	.209	45	CD15	1.2	.038	.C11	.0003	.289	5%		H I K L M	O P R S	
C068A	.209	45	F9	3.6	.061	.C19	.0009	.311	9%		H I J L M N	O P R S	T U V W X
C068A	.209	45	F14	2.4	.084	.027	.0018	.321	12%		H I K L M N	O P R S	T U V W X
C068A	.209	45	C7	1.2	.030	.CC8	.0002	.267	3%		H I J L M	O P R S	
C069A	.209	50	E15	1.2	.071	.C25	.0014	.352	11%		H J K L M	O P R S	T U V W
C069A	.209	50	E7	1.2	.066	.02C	.0010	.303	9%		H I J K L M N	O P R S	T U V W
C069A	.209	50	E9	3.6	.131	.C49	.0050	.374	23%		H I J K L M N	O P R S	T U V W X
C069A	.209	50	E13	3.6	.064	.C21	.0011	.328	10%		H J K L M N	O P R S	T U V W X
C069A	.209	50	E11	5.9	.115	.C42	.0038	.365	20%		H I J K L M N	O P Q R S	T U V W X
C069A	.209	50	B10	4.8	.096	.C36	.0027	.375	17%		H I J K L M	O P Q R S	T U V W X
C070A	.206	45	BC7	1.2	.087	.022	.0015	.253	10%	E	H I J K L M N	O P R S	T U V W X
C070B	.206	45	D11	5.9	.106	.038	.0C32	.358	18%	G	H I J K L M N	O P Q R S	T U V W X
C070A	.206	45	EF15	1.2	.134	.C49	.0052	.366	23%	F G	H I J K L M N	O P Q R S	T U V W X
C071A	.206	35	D15	1.2	.518	.C96	.0390	.185	46%	A B C E F G	H I J K L M N	O P Q R S	T U V W X
C071A	.206	35	B7	1.2	.495	.C97	.0377	.196	47%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C072A	.207	50	E6	0.0	.326	.1C5	.0269	.322	50%	A E F G	H I J K L M N	O P Q R S	T U V W X
C072B	.207	50	E14	2.4	.523	.114	.0468	.218	55%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C072A	.207	50	E10	4.8	.568	.117	.0522	.206	56%	A B E F G	H I J K L M N	O P Q R S	T U V W X
C073A	.209	045	EF12	4.8	.08C	.025	.0016	.313	11%		I K L M N	O P Q R S	T U V W
C073A	.209	045	F9	3.6	.046	.C14	.0005	.304	6%		H I L M N	O P R S	V
C073B	.209	045	C9	3.6	.06C	.061	.0029	****	29%	D E F G	H I J K L M N	O P Q R S	T U V W X
C073A	.209	045	E14	2.4	.071	.023	.0013	.324	11%		H I K L M N	O P Q R S	T U V W
C073B	.209	045	B11	5.9	.035	.CC7	.0002	.200	3%		H I L	P S	
C074B	.208	45	C13	3.6	.054	.C15	.0006	.278	7%		H K L M N	O P R S	T U X
C074B	.208	45	E8	2.4	.129	.049	.0050	.380	23%		H I J K L M N	P Q R S	T U W X
C074B	.208	45	BC7	1.2	.496	.178	.0693	.359	85%	A B C D E F	H I K L M N	O P Q R S	T U V W X
C074B	.208	45	CD9	3.6	.103	.036	.0029	.350	17%	D	H I J K L M N	P Q R S	U V W X
C074B	.208	45	DE11	5.9	.158	.C57	.0071	.361	27%	F	H I J K L M N	O P Q R S	T U V W X
C075B	.210	55	EF15	1.2	.317	.C51	.0127	.161	24%		H I J K L M	O P Q R S	T U V W X
C075B	.210	55	C7	1.2	.321	.053	.0134	.165	25%	A B	H I J K L M	O P Q R S	T U V W X
C076A	.211	50	B11	5.9	.484	.111	.0422	.229	52%	A B D E F G	H I J K L M N	O P Q R S	T U V W X
C077B	.206	45	C13	3.6	.02C	.0C5	.0001	.250	2%				

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FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY SPECIMEN NUMBER

C077A	.206	45	E8	2.4	.182	.071	.0101	.390	34%		H I J K L M N	O P Q R S	T U V W X
C077A	.206	45	E9	3.6	.045	.C11	.0004	.244	5%		K L M N	O P Q R S	U V W X
C078A	.207	40	C7	1.2	.25C	.036	.0071	.144	17%	B E F	H I J K L M N	O P Q R S	T U V W X
C078A	.207	40	D15	1.2	.494	.1C6	.0411	.215	51%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C079A	.211	55	BC12	4.8	.283	.1C9	.0242	.385	51%	E	H I J K L M N	O P Q R S	T U V X
C080A	.206	35	D15	1.2	.117	.042	.0039	.359	20%		H I J K L M N	O P Q R S	T U V W X
C080A	.206	35	D12	4.8	.124	.046	.0045	.371	22%		H I J K L M N	O P Q P S	T U V W X
C080A	.206	35	DE7	1.2	.129	.051	.0052	.395	24%		H I J K L M N	O P Q R S	T U V W X
C081A	.208	40	B7	1.2	.075	.C26	.0015	.347	12%	D	H I J K L M	O P R S	T U V W X
C081A	.208	40	E11	5.9	.10C	.035	.0027	.350	16%	D	H I J K L M N	O P R S	T U V W X
C081A	.208	40	F14	2.4	.135	.C50	.0053	.370	24%		H I J K L M	O P R S	T U V W X
C081A	.208	40	C13	3.6	.088	.C33	.0023	.375	15%	D	H I J K L M N	O P R S	T U V W X
C084A	.210	45	C8	2.4	.049	.016	.0006	.327	7%	G	H I K L M	O P R S	U X
C084A	.210	45	EF13	3.6	.136	.C49	.0052	.360	23%	D	H I J K L M N	O P Q R S	T U V W X
C084A	.210	45	A11	5.9	.105	.C41	.CC34	.390	19%	D E	H I J K L M N	O P Q R S	T U V W X
C084A	.210	45	DE14	2.4	.08C	.C28	.0018	.350	13%	D G	H I K L M N	O P Q R S	T U V W X
C084A	.210	45	A10	4.8	.069	.C21	.0011	.304	9%	E	I K L M N	O P Q P S	U V W X
C084A	.210	45	E6	0.0	.028	.CC7	.0002	.250	3%	G	I L M	O P R S	U
C085A	.209	45	C15	1.2	.146	.054	.0062	.370	25%		H I J K L M N	O P Q R S	T U V W X
C085B	.209	45	E8	2.4	.153	.C64	.0077	.418	30%	D G	H I J K L	O P Q R S	T U V W X
C086A	.206	35	DE15	1.2	.138	.C5C	.0054	.362	24%		H I J K L M N	O P R S	T U V W X
C086A	.206	35	CD9	3.6	.095	.C32	.C024	.337	15%		H I J K L M N	O P R	T U V W X
C086A	.206	35	C7	1.2	.108	.C41	.0C35	.380	19%		H I J K L M N	O P R S	T U V W X
C086A	.206	35	B11	5.9	.097	.C28	.0C21	.289	13%		H I J K L M N	O P R S	T U V W X
C087A	.209	160	BC14	2.4	.710	.126	.0702	.177	60%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C087A	.209	160	BC6	0.0	.559	.115	.0505	.206	55%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C088A	.197	150	EF15	1.2	.310	.C49	.0119	.158	24%	E F G	H I K L M N	O P Q R S	T U V W X
C088A	.197	150	E11	5.9	.329	.C53	.0137	.161	26%	F G	H I J K L M N	O P Q R S	T U V W X
C091B	.205	145	BC11	5.9	.500	.1C3	.0404	.206	50%	A B D E F G	H I J K L M N	O P Q S	T U V W X
C092B	.209	160	C7	1.2	.301	.C34	.0C80	.113	16%	E F G	H I J K L M N	O P Q R S	T U V W X
C092B	.209	160	D14	2.4	.298	.C37	.0C87	.124	17%	E F G	H I J K L M N	O P Q R S	T U V W X
C092A	.209	160	E10	4.8	.295	.C47	.0109	.159	22%	F G	H I J K L M N	O P Q R S	T U V W X
C093A	.208	150	D7	1.2	.535	.116	.0487	.217	55%	A B C D E F G	H I J K L M N	O P S	T U W X
C093B	.208	150	D11	5.9	.492	.1C7	.0413	.217	51%	C D E F G	H I J K L M N	O P S	T U W X
C093A	.208	150	E15	1.2	.61C	.126	.0603	.207	60%	A B C D E F G	H I J K L M N	O P S	T U V W X
C094A	.210	140	D14	2.4	.162	.063	.0080	.389	30%	F G	H I J K L M N	O P S	T U V W X
C094A	.210	140	EF9	3.6	.076	.C26	.0016	.342	12%		H I J K L M N	P S	T U V W X
C094A	.210	140	D12	4.8	.153	.C6C	.0072	.392	28%	F G	H I J K L M N	O P R S	T U V W X
C094A	.210	140	D7	1.2	.098	.035	.0027	.357	16%	C F	H I J K L M N	P S	T U V W X
C095A	.208	190	C10	4.8	.322	.C44	.0111	.137	21%	A B D F	H I J K L M N	O P Q S	T U W X
C095A	.208	190	E6	0.0	.338	.06C	.0159	.178	28%	A B	H I J K M	O P Q S	T U X
C095A	.208	190	BC14	2.4	.328	.C51	.0131	.155	24%		H I J K L M N	O P Q R S	T U V W X
C096A	.207	180	BC6	0.0	.313	.044	.0108	.141	21%	A E F G	H I J K L M N	O P Q S	T U V W X
C096A	.207	180	B14	2.4	.393	.077	.C238	.196	37%	A B C D E F G	H I J K M N	O P Q R S	T U V W X
C096A	.207	180	E10	4.8	.347	.C59	.0161	.170	28%	A E F G	H I J K L M N	O P Q S	T U V W X
C097A	.210	145	D10	4.8	.126	.C57	.0056	.452	27%	F G	H I J K L M N	O P Q S	T U V W X
C100A	.208	205	EF9	3.6	.055	.017	.0007	.309	8%		H		T
C100A	.208	205	B8	2.4	.041	.C11	.0004	.268	5%		H I		
C100A	.208	205	B14	2.4	.131	.045	.0046	.344	21%	F G	H I J K L M N	O P R S	U V W X
C100A	.208	205	D10	4.8	.076	.C34	.0020	.447	16%	E F G	H I J K L M N	O P Q R S	T U V W X
C100A	.208	205	F6	0.0	.04C	.01C	.0003	.250	4%	E F G	H I L M N	Q S	T V W X
C100A	.208	205	B13	3.6	.097	.C32	.0024	.330	15%	F G	H I J K L M N	O P R S	T U V W X
C101A	.210	300	CD14	2.4	.055	.C16	.0C07	.291	7%	D	H J K L M	O P S	U W X
C101A	.210	300	BC12	4.8	.106	.035	.0029	.330	16%	D G	H I J K L M N	O P Q R S	T U V W X

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY SPECIMEN NUMBER

C101A	.210	300	F8	2.4	.140	.052	.0057	.371	24%	D F	H I J K L M N	O P Q R S	T U V W X
C101A	.210	300	BC9	3.6	.094	.C32	.0024	.340	15%	D	H I J K L M N	O P Q R S	T U V W X
C101A	.210	300	C6	0.0	.064	.023	.0012	.359	10%	D	H I J K L M N	O P Q R	U X
C101A	.210	300	EF11	5.9	.103	.C35	.0028	.340	16%	D E F G	H I J K L M N	O P Q S	T U V W X
C102A	.211	300	C8	2.4	.141	.057	.0C63	.404	27%	F	H I J K L M N	O P Q R S	T U W X
C102A	.211	300	E13	3.6	.136	.053	.0057	.390	25%	D E F	H I K L M N	O P Q R S	T U V W X
C103B	.208	140	E13	3.6	.073	.C26	.0015	.356	12%		H J K L M	O P Q R S	T U W
C103B	.208	140	BC9	3.6	.017	.CC8	.0001	.471	3%		H J L M	P Q	
C103A	.208	140	D11	5.9	.148	.C60	.0070	.405	28%	E F G	H I K L M N	O P R S	T U V W X
C104B	.210	280	BC11	5.9	.513	.1C9	.0439	.212	51%	D E F G	H I J K L M N	O P Q R S	T U V W X
C104A	.210	280	D15	1.2	.979	.149	.1145	.152	70%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C105B	.209	140	D11	5.9	.466	.1C9	.0399	.234	52%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C105A	.209	140	C7	1.2	.543	.116	.0494	.214	55%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C105A	.209	140	D15	1.2	.495	.1C8	.0420	.218	51%	A B C D F G	H I J K L M N	O P Q R S	T U V W X
C106A	.209	160	BC6	0.0	.312	.025	.0C61	.080	11%	F	H I J K L M N	O P Q R S	T U V W X
C106A	.209	160	BC14	2.4	.331	.C43	.0112	.130	20%	E F G	H I J K L M N	O P Q R S	T U V W X
C106A	.209	160	F10	4.8	.306	.C4C	.0096	.131	19%	A B E F G	H I J K L M N	P Q R S	T U W X
C107A	.210	140	EF7	1.2	.304	.C36	.0C86	.118	17%	E	H I J K L M N	O P Q R S	T U V W X
C107A	.210	140	D11	5.9	.503	.1C9	.0430	.217	51%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C108A	.209	150	F11	5.9	.07C	.023	.0013	.329	11%		H	O P S	T U
C108A	.209	150	D15	1.2	.073	.024	.CC14	.329	11%		H I J K L M N	O P Q R S	T U V W X
C108A	.209	150	D8	2.4	.134	.048	.0050	.358	22%		H I J K L M N	O P Q R S	T U V W X
C108A	.209	150	B11	5.9	.095	.036	.0027	.379	17%		H I J K L M N	O P Q R S	T U V W X
C109A	.208	160	BC14	2.4	.C63	.024	.0012	.381	11%		H I J K L M N	O P Q R S	U V X
C109B	.208	160	EF12	4.8	.066	.018	.0009	.273	8%	E	H J K	O P Q R	T U V W X
C109A	.208	160	BC6	0.0	.076	.033	.0020	.434	15%		H I J K	O P	T U
C109A	.208	160	BC10	4.8	.151	.059	.0070	.391	28%	E F G	H I J K L M N	O P Q R S	T U V W X
C110A	.209	145	F8	2.4	.098	.031	.0024	.316	14%	E	H I J K L M N	O P Q R S	T U V W X
C110A	.209	145	B14	2.4	.185	.C74	.C107	.400	35%	A E F G	H I J K L M N	O P Q R S	T U W X
C110A	.209	145	BC10	4.8	.C75	.C27	.0C16	.360	12%		H I J K L N	O P Q R S	T U W X
C111A	.209	100	BC14	2.4	.171	.067	.0C90	.392	32%	E F G	H I J K L M N	O P Q R S	T U V W X
C111A	.209	100	EF15	1.2	.092	.032	.0023	.348	15%		H I J K M N	O P Q R S	T U V W X
C112A	.207	175	F6	0.0	.521	.112	.0458	.215	54%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C112A	.207	175	D10	4.8	.52C	.1C9	.0445	.210	52%	A D E F G	H I J K L M N	O P Q R S	T U V W X
C113A	.210	280	E14	2.4	.509	.119	.0475	.234	56%	A B C D E F G	H I J K L M N	O P Q R S	T U W X
C113A	.210	280	BC10	4.8	.499	.114	.0447	.228	54%	D E F G	H I J K L M N	O P Q R S	T U W X
C113A	.210	280	BC6	0.0	.514	.111	.0448	.216	52%	A B C D E F G	H I J K L M N	O P Q R S	T U W X
C114A	.208	250	BC15	1.2	.342	.C62	.0166	.181	29%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C116A	.207	180	B14	2.4	.124	.044	.0043	.355	21%	E	H I J K L M N	O P Q R	T U V W X
C116A	.207	180	B6	0.0	.057	.013	.0006	.228	6%		I J K L N	O P Q	U W X
C116A	.207	180	B9	3.6	.072	.022	.0012	.306	10%		H I J K L N	O P Q R	T U W X
C116A	.207	180	D11	5.9	.117	.041	.0038	.350	19%		H I K L N	O P Q R S	T U V W X
C116A	.207	180	F13	3.6	.069	.025	.0014	.362	12%		H I	O P Q S	U W X
C116A	.207	180	F6	0.0	.042	.C14	.0005	.333	6%		H I J	O P Q S	U W X
C117A	.208	220	BC7	1.2	.078	.C28	.0017	.359	13%	E F G	H I J L M N	O P Q R S	U V W X
C117B	.208	220	F9	3.6	.129	.058	.0059	.450	27%	E F G	H I J K L M N	O P Q R	T U W X
C117A	.208	220	BC15	1.2	.119	.C40	.0037	.336	19%	E F G	H I J K M N	O P Q R S	T U V W X
C117B	.208	220	E13	3.6	.183	.C68	.0098	.372	32%	E F G	H I J K L M N	P Q R S	T U W X
C118A	.209	300	D8	2.4	.132	.050	.0052	.379	23%		H I J K L M N	O P Q R S	T U V W X
C118A	.209	300	B13	3.6	.105	.C37	.0030	.352	17%		H I J K L M N	O P Q R S	T U V W X

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ROCKWELL INTERNATIONAL
SPACE DIVISION
NONDESTRUCTIVE EVALUATION TECHNOLOGY GROUP
DEPARTMENT 044-130 QUALITY ENGINEERING
FLAW SENSITIVITY EVALUATION

SORTED BY FLAW LENGTH

SAMPLE NUMBER	THICK	FINISH	LOCATION	INCLD ANGLE	LENGTH (2C)	DEPTH (A)	AREA	A/2C	A/T	X-RAY							PENETRANT							ULTRASONIC					F/C				
										A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C018A	.061	50	D6	0.C	.007	.001	.0000	.143	1%																								
C021A	.059	55	C7	1.2	.01C	.CC4	.0000	.400	6%								H		J					O									
C042A	.069	55	D11	5.9	.C11	.CC4	.0000	.364	5%				D				H			K		M	N		P	Q	R	S	T			W	
C041A	.060	260	E11	5.9	.015	.CC3	.0000	.200	5%																		R						
C025A	.061	45	FG12	4.8	.015	.C21	.0002	****	34%																								
C014A	.061	40	DE12	4.8	.C17	.CC3	.0000	.176	4%															O									
C103B	.208	140	BC9	3.6	.017	.CC8	.CC01	.471	3%								H		J		L	M			P	Q							
C041A	.060	260	D7	1.2	.01E	.CC3	.0000	.167	5%															O			R						
C077B	.206	45	C13	3.6	.02C	.0C5	.0001	.250	2%																								
C054A	.061	300	CD11	5.9	.02C	.CC5	.0001	.250	8%																								
C018B	.061	50	BC14	2.4	.021	.C04	.0C01	.190	6%											K	L				P		R	S					
C053A	.061	240	E11	5.9	.021	.CC4	.0C01	.190	6%							G	H		J	K		M		O	P		R	S					
A004	.063	30	EF6	0.0	.022	.CC7	.0001	.318	11%					E	F	G					L	M	N			Q	R	S			V	W	X
C044A	.060	140	C6	0.0	.025	.CC3	.0001	.120	5%															O									
C018A	.061	50	B14	2.4	.025	.CC3	.0C01	.120	4%									I		K	L			O	P		R	S					
C044A	.060	140	BC10	4.8	.026	.017	.0003	.654	28%					E	F	G			J		L	M	N		P	Q	R	S	T		V	W	X
C048A	.059	160	EF9	3.6	.026	.C2C	.0004	.769	33%	A				E		G	H	I	J	K	L	M	N	O	P	Q	R	S		U	V	W	X
A003	.054	32	EF11	5.9	.C27	.CC5	.0001	.185	9%																								
C084A	.210	45	E6	0.0	.028	.CC7	.0C02	.250	3%							G		I			L	M		O	P		R	S		U			
C019A	.058	60	B8	2.4	.C30	.CC4	.0001	.133	6%	A	B						H	I		K	L		N		P		R	S					
C068A	.209	45	C7	1.2	.030	.CC8	.0002	.267	3%								H	I	J		L	M		O	P		R	S					
C025A	.061	45	B10	4.8	.C3C	.C1C	.0002	.333	16%								H				L	M		O	P	Q	R	S					
C025A	.061	45	BC14	2.4	.031	.CC2	.0CC0	.065	3%												L	M		O	P	Q	R	S					
C028A	.059	50	D15	1.2	.032	.CC8	.0002	.250	13%				D					I	J	K	L	M		O	P				T				
C020A	.059	40	E7	1.2	.032	.CC9	.0002	.281	15%								H	I		K	L	M		O	P	Q	P	S		U			
C044A	.060	140	B14	2.4	.033	.C17	.0C04	.515	28%								H			K		M	N	O	P	Q	R			U			
A016	.058	125	BC3	3.6	.034	.CC7	.0002	.206	12%																								
C052A	.061	180	EF10	4.8	.C35	.CC5	.0001	.143	8%								H		J	K		M	N	O	P	Q	R	S				W	X
C018B	.061	50	CD13	3.6	.035	.CC6	.0002	.171	9%				D		F					K	L	M			P	Q	R	S				W	
C073B	.209	045	B11	5.9	.035	.CC7	.0002	.200	3%								H	I			L				P			S					
C047B	.059	160	C8	2.4	.036	.014	.0C04	.389	23%						F		H	I	J	K	L	M	N		P	Q	R	S		U		W	
C068A	.209	45	CD15	1.2	.038	.C11	.0003	.289	5%								H	I		K	L	M		O	P		R	S					
C100A	.208	205	F6	0.0	.04C	.C1C	.0003	.250	4%					E	F	G	H	I			L	M	N			Q		S	T		V	W	X
C017A	.057	60	B15	1.2	.04C	.C10	.0C03	.250	17%								H			K	L	M	N	O	P		R				V	W	X
C045A	.064	145	DE14	2.4	.041	.CC6	.0002	.146	9%					E		G	H	I		K	L	M	N	O	P	Q	R					W	
C052A	.061	180	EF12	4.8	.041	.CC7	.0C02	.171	11%								H	I	J	K		M	N	O	P	Q	R	S				W	X
C100A	.208	205	B8	2.4	.041	.C11	.0004	.268	5%								H	I															
C055A	.054	300	B15	1.2	.041	.C11	.0004	.268	20%								H	I	J	K		M		O	P	Q	R			U		W	
C116A	.207	180	F6	0.0	.042	.C14	.0C05	.333	6%								H	I	J					O	P	Q		S		U		W	X
C011A	.062	40	D6	0.0	.044	.CC7	.0002	.159	11%								H	I		K	L	M	N	O	P	Q	R	S		U		W	

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY FLAW LENGTH

C045A	.064	145	CD12	4.8	.045	.0C7	.0002	.156	10%	G H K L M N O P Q R S W
C030A	.060	160	C6	0.0	.045	.CC8	.0003	.178	13%	H I J K L M N O P Q R S V W
C077A	.206	45	E9	3.6	.045	.C11	.0004	.244	5%	K L M N O P Q R S U V W X
C048A	.059	160	B10	4.8	.045	.C18	.0006	.400	30%	A D G H I J K L M N O P Q R S U V W
C073A	.209	045	F9	3.6	.046	.014	.0005	.304	6%	H I L M N O P R S V
C020A	.059	40	BC11	5.9	.047	.C15	.0006	.319	25%	A B C E F G H I J K L M N O P Q R S U V W
C047A	.059	160	DE15	1.2	.047	.C17	.0006	.362	28%	E H I L M N O P Q R S U V W
A023	.059	230	FG3	3.6	.048	.CC8	.0003	.167	13%	
C027A	.059	50	B15	1.2	.048	.C13	.0005	.271	22%	E F H I J K L M N O P Q R S U V W
C052A	.061	180	CD11	5.9	.049	.CC6	.0002	.122	9%	H I K M N O P Q R S W X
C084A	.210	45	C8	2.4	.049	.016	.0006	.327	7%	G H I K L M O P R S U X
C033A	.059	150	DE14	2.4	.049	.C17	.0007	.347	28%	H M N O Q R U V W
C015B	.061	045	BC13	3.6	.051	.C12	.0005	.235	19%	A F G H I J K N P Q R S T U W X
C044B	.060	140	CD8	2.4	.C52	.C11	.0004	.212	18%	D E F H J K L M N O P Q R S V W
C074B	.208	45	C13	3.6	.054	.C15	.0006	.278	7%	H K L M N O P R S T U X
C042B	.069	55	BC8	2.4	.055	.C10	.0004	.182	14%	B H I J K L M N O P Q R S V W X
A018	.061	130	FG7	1.2	.055	.C14	.0006	.255	22%	I L M N Q R S U V W X
C101A	.210	300	CD14	2.4	.055	.C16	.0007	.291	7%	D H J K L M O P S U W X
C100A	.208	205	EF9	3.6	.055	.C17	.0007	.309	8%	H T
C015A	.061	045	D11	5.9	.056	.014	.0006	.250	22%	A D E F G H I J K N O P Q R T U W X
C116A	.207	180	B6	0.0	.057	.C13	.0006	.228	6%	I J K L N O P Q U W X
C003B	.059	45	D10	4.8	.058	.C11	.0005	.190	18%	G H I J K L M N O P Q R S U W
C044B	.060	140	BC12	4.8	.058	.C11	.0005	.190	18%	H L M N O Q R S T W
C034A	.059	80	BC8	2.4	.058	.C20	.0C09	.345	33%	A D F H I K L M N O P Q R S T U W
A015	.059	125	EF5	1.2	.059	.C15	.0007	.254	25%	L M Q R S T U V
C028B	.059	50	BC11	5.9	.C59	.C2C	.0C09	.339	33%	G H I J K P Q R T V W
C033A	.059	150	EF10	4.8	.060	.C21	.0010	.350	35%	E H I J K L M N O P Q R S T U W X
C007A	.059	50	BC11	5.9	.06C	.C26	.0012	.433	44%	A E F G H K L M N O P Q R S T U W
C002A	.058	60	E7	1.2	.06C	.026	.0012	.433	44%	F H I J K L M N O P Q R S T U V W X
C073B	.209	045	C9	3.6	.06C	.061	.0029	****	29%	D E F G H I J K L M N O P Q R S T U V W X
C045B	.064	145	D9	3.6	.061	.01C	.0005	.164	15%	E F H I K M N O P Q R S U W
C030A	.060	160	C12	4.8	.061	.011	.0005	.180	18%	G H I J K L M N O P Q R S T U V W X
C068A	.209	45	F9	3.6	.061	.C19	.0009	.311	9%	H I J L M N O P R S T U V W X
C011A	.062	40	D12	4.8	.062	.011	.0005	.177	17%	E H I K L M N O P Q R S U V W X
C015B	.061	045	EF9	3.6	.062	.013	.0006	.210	21%	F H I J K N P Q R S T U V W X
A012	.056	60	DE6	0.0	.062	.C13	.0006	.210	23%	L M P T U W X
C047B	.059	160	B11	5.9	.062	.021	.0010	.339	35%	E H I J K L M N P Q R S U V W
C034A	.059	80	BC16	0.0	.062	.C24	.0012	.387	40%	A B E F G H I K L M N O P Q R S T U V W
C033B	.059	150	CD8	2.4	.062	.C24	.0012	.387	40%	A E F G H I J K L M O P Q R S T U V W
C039B	.061	173	C11	5.9	.063	.C13	.0006	.206	21%	B D E F G H I J K L M N O P Q R S T U V W X
C054B	.061	300	E17	1.2	.063	.C21	.0010	.333	34%	A B C D H I J K L M N O P Q R S T U V W X
C109A	.208	160	BC14	2.4	.063	.C24	.0C12	.381	11%	H I J K L M N O P Q R S U V X
A017	.061	130	DE11	5.9	.064	.C13	.0007	.203	21%	M Q R S U W X
A024	.057	230	BC7	1.2	.064	.C14	.0007	.219	24%	K M N P Q R S T U
C069A	.209	50	E13	3.6	.064	.C21	.0011	.328	10%	H J K L M N O P R S T U V W X
C068A	.209	45	B10	4.8	.064	.023	.0012	.359	11%	H I J K L M N O P R S T U W X
C101A	.210	300	C6	0.0	.064	.023	.0012	.359	10%	D H I J K L M N O P Q R U X
C039B	.061	173	F12	4.8	.065	.C11	.0006	.169	18%	H I J K M N O P Q R S T U V W X
C011A	.062	40	D9	3.6	.065	.C13	.0007	.200	20%	H I J K L M N O P Q R S T U V W X
A017	.061	130	EF7	1.2	.065	.C17	.0009	.262	27%	M Q R S U V W X
C109B	.208	160	EF12	4.8	.066	.C18	.0C09	.273	8%	E H J K O P Q R T U V W X
C069A	.209	50	E7	1.2	.066	.020	.0010	.303	9%	H I J K L M N O P R S T U V W
C009A	.057	50	CD6	0.0	.066	.024	.0012	.364	42%	E G H I J K L M N O P Q R S T U V W X
C045A	.064	145	B6	0.0	.066	.026	.0013	.394	40%	I Q
C039B	.061	173	B8	2.4	.067	.013	.0C07	.194	21%	A B E F G H I J K L M N O P Q R S T U W
C002A	.058	60	EF11	5.9	.067	.C14	.0007	.209	24%	F G H I J K L M N O P R S U W X
C045B	.064	145	EF14	2.4	.067	.C15	.0008	.224	23%	G H I K L M N P Q R S U W X

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY FLAW LENGTH

A006	.062	32	EF13	3.6	.067	.C24	.0013	.358	38%	E J K M N P Q R S U V W X
C047A	.059	160	F7	1.2	.067	.025	.0013	.373	42%	A E F H I J K L M N O P Q R S T U V W X
C007A	.059	50	C8	2.4	.067	.C27	.0014	.403	45%	H K L M N O P Q R S T U V W X
C014A	.061	40	CD15	1.2	.068	.012	.0006	.176	19%	A D H I J K L M N O P Q R S T U V W
C039B	.061	173	E9	3.6	.068	.C13	.0007	.191	21%	A E F G H I J K M N O P Q R S T U V W X
A002	.059	30	CD13	3.6	.068	.C16	.0009	.235	27%	H I K L M P Q R S U V X
A012	.056	60	EF9	3.6	.069	.C15	.0008	.217	26%	G M P Q S T U V W X
C053A	.061	240	B8	2.4	.069	.C15	.0008	.217	24%	D E F G H I J K L M N O P Q R S U W X
A023	.059	230	CD5	1.2	.069	.018	.0C10	.261	30%	H J K L M N U V W X
A022	.061	230	BC13	3.6	.069	.021	.0C11	.304	34%	I J K P Q R S T U
C084A	.210	45	A10	4.8	.069	.021	.0011	.304	9%	E I K L M N O P Q R S U V W X
C055B	.054	300	B8	2.4	.069	.022	.0012	.319	40%	D E F G H I J K L M N P Q R S T U V W X
C116A	.207	180	F13	3.6	.C69	.025	.0014	.362	12%	H I O P Q S U W X
C017A	.057	60	E6	0.0	.069	.026	.0014	.377	45%	E F G H I K L M N O P Q R S T U V W X
C019B	.058	60	E12	4.8	.07C	.C16	.0009	.229	27%	E F G H I K L M N O P Q R S T U V W
C108A	.209	150	F11	5.9	.07C	.C23	.0013	.329	11%	H O P S T U
C034A	.059	80	EF11	5.9	.07C	.C27	.0015	.386	45%	H L M N O P Q R S T U V W X
C073A	.209	045	E14	2.4	.071	.023	.0013	.324	11%	H I K L M N O P Q R S T U V W
C069A	.209	50	E15	1.2	.071	.025	.0014	.352	11%	H J K L M O P R S T U V W
C018A	.061	50	C11	5.9	.072	.C16	.0009	.222	26%	E F G H I J K L M O P Q R S T U V W
C116A	.207	180	B9	3.6	.072	.022	.0C12	.306	10%	H I J K L N O P Q R T U W X
C036A	.061	140	BC12	4.8	.073	.C17	.0010	.233	27%	A D E F G H I J K L M N O P Q R S T U V W X
A009	.059	60	EF5	1.2	.073	.C22	.0013	.301	37%	H J K L M P Q R S T U V W X
C108A	.209	150	D15	1.2	.073	.C24	.0C14	.329	11%	H I J K L M N O P Q R S T U V W X
C103B	.208	140	E13	3.6	.C73	.026	.0015	.356	12%	H J K L M O P Q R S T U W
C003B	.059	45	D14	2.4	.074	.C15	.0C09	.203	25%	E H I J K L M N O P Q R S T U W X
A005	.063	32	BC2	4.8	.075	.C21	.0012	.280	33%	H J L M N Q R S T U V X
A010	.060	60	EF3	3.6	.075	.C23	.0014	.307	38%	H I J K L M N P Q R S T U V W X
C081A	.208	40	B7	1.2	.075	.C26	.0015	.347	12%	D H I J K L M O P R S T U V W X
C110A	.209	145	BC10	4.8	.075	.C27	.0016	.360	12%	H I J K L N O P Q R S T U W X
C055A	.054	300	E7	1.2	.076	.025	.0015	.329	46%	F G H I J K L M N O P Q R S T U V W X
C094A	.210	140	EF9	3.6	.076	.C26	.0016	.342	12%	H I J K L M N P S T U V W X
C109A	.208	160	BC6	0.0	.076	.033	.0020	.434	15%	H I J K O P T U
C100A	.208	205	D10	4.8	.076	.034	.0020	.447	16%	E F G H I J K L M N O P Q R S T U V W X
C030A	.060	160	BC13	3.6	.077	.C11	.0C07	.143	18%	G H I J K L M N O P Q R S T U V W X
C013A	.059	35	E9	3.6	.077	.014	.0008	.182	23%	B E F G H I J K L M O P Q R S T U V W X
C012A	.062	35	F6	0.0	.077	.C14	.0008	.182	22%	A D H I K L M N O P Q R S T U V W X
C014A	.061	40	F7	1.2	.077	.C15	.0C09	.195	24%	H I J K L M N O P Q R S U V W
A010	.060	60	BC15	1.2	.C78	.C21	.0C13	.269	35%	A B D H I J K L M N P Q R S T U W X
C033B	.059	150	BC12	4.8	.078	.C28	.0C17	.359	47%	A B C F G H I J K L M O P Q R S T U V W
C117A	.208	220	BC7	1.2	.078	.C28	.0C17	.359	13%	E F G H I J L M N O P Q R S U V W X
C003A	.059	45	EF12	4.8	.079	.C11	.0007	.139	18%	A B E G H J K L M N P Q R S T U V W X
C019B	.058	60	E10	4.8	.079	.C15	.0C09	.190	25%	A B C D E F G H I K L M N O P Q R S T U V W X
C025A	.061	45	D8	2.4	.079	.018	.0011	.228	29%	A B D F G H I K L M N O P Q R S U V W X
C028A	.059	50	D7	1.2	.079	.C30	.0019	.380	50%	A B E H I J K L M N O P Q R S T U V W X
C048A	.059	160	F12	4.8	.079	.C31	.0C19	.392	52%	A E F G H I J K L M N O P Q R S T U V W X
C041A	.060	260	CD15	1.2	.080	.C21	.0013	.263	35%	F G H I J K L M N O P R S T U V W X
A008	.059	60	EF8	2.4	.08C	.C22	.0014	.275	37%	H I J K L M N P Q R S T U V W X
C073A	.209	045	EF12	4.8	.08C	.C25	.0016	.313	11%	I K L M N O P Q R S T U V W
C084A	.210	45	DE14	2.4	.080	.C28	.0018	.350	13%	D G H I K L M N O P Q R S T U V W X
C034A	.059	80	DE14	2.4	.08C	.C3C	.0019	.375	50%	A B C D E F G H I K L M N O P Q R S T U V W X
A006	.062	32	DE8	2.4	.081	.C19	.0012	.235	30%	M P Q R S U V X
A018	.061	130	FG2	4.8	.081	.026	.0017	.321	42%	I L M N P Q R S T U V W X
C003A	.059	45	EF9	3.6	.C82	.020	.0013	.244	33%	E F G H I J K L M N P Q R S T U V W X
C033A	.059	150	F6	0.0	.082	.C31	.0020	.378	52%	D F H I J K L M N O P Q R S T U V W X
C002A	.058	60	EF9	3.6	.082	.C32	.0021	.390	55%	B C E F G H I J K L M N O P Q R S T U V W X
C019B	.058	60	F15	1.2	.083	.C15	.0010	.181	25%	A D E F G H I K L M N O P Q R S T U V W X

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY FLAW LENGTH

C026A	.056	290	C8	2.4	.083	.C29	.0019	.349	51%	D E F G H I K L M N O P Q R S T U V W
C004B	.060	45	F9	3.6	.083	.C29	.0019	.349	48%	A B C E F G H I J K L M N O P Q R S T U V W X
C027B	.059	50	C7	1.2	.083	.C3C	.0020	.361	50%	B D E F G H I J K L M N O P Q R S T U V W X
C006A	.059	55	E9	3.6	.084	.C20	.0013	.238	33%	H I K P T U
A024	.057	230	BC2	4.8	.084	.C21	.0C14	.250	36%	N P Q R S T U V
C068A	.209	45	F14	2.4	.C84	.C27	.0018	.321	12%	H I K L M N O P R S T U V W X
A020	.060	230	CD14	2.4	.085	.C19	.0013	.224	31%	F H I L M N P Q R S T U V W X
A005	.063	32	FG4	2.4	.085	.C24	.0C16	.282	38%	H I J K L M N P Q R S T U V W X
A022	.061	230	FG3	3.6	.085	.C29	.0019	.341	47%	H I J K L M N P Q R S T U V W X
C020A	.059	40	C8	2.4	.085	.C33	.0022	.388	55%	A C D E F G H I J K L M N O P Q R S T U V W X
C048A	.059	160	BC12	4.8	.085	.C33	.0022	.388	55%	A C D E F G H I J K L M N O P Q R S T U V W X
C019A	.058	60	C13	3.6	.086	.017	.0011	.198	29%	A B C D E F G H I K L M N P Q R S T V W X
C019B	.058	60	F7	1.2	.086	.C19	.0013	.221	32%	D E F G H I K L M N O P Q R S T U W X
C052A	.061	180	B9	3.6	.C86	.020	.0014	.233	32%	A B E F G H I J K L M N O P Q R S T U V W X
A011	.062	60	BC15	1.2	.086	.C2S	.0C20	.337	46%	H J K L M N O P Q R S T U V W X
C040B	.058	290	CD11	5.9	.086	.031	.0021	.360	53%	A B C D E F G H I J K L M N O P Q R S T U V W X
C007A	.059	50	EF7	1.2	.087	.C18	.0C12	.207	30%	C F G H K L M N O P Q R S T U V W X
C070A	.206	45	BC7	1.2	.087	.C22	.0C15	.253	10%	E H I J K L M N O P R S T U V W X
C081A	.208	40	C13	3.6	.088	.C33	.0023	.375	15%	D H I J K L M N O P R S T U V W X
A023	.059	230	DE15	1.2	.C89	.C20	.0014	.225	33%	H I J K L M N P T U V W X
A017	.061	130	BC15	1.2	.089	.022	.0C15	.247	36%	H I J K M P Q R S U V W X
C052A	.061	180	BC14	2.4	.090	.C17	.0C12	.189	27%	A B D E F G H I J K L M N O P Q R S T U V W X
A009	.059	60	CD10	4.8	.090	.C24	.0C17	.267	40%	H J K L M N P Q R S T U W X
C018A	.061	50	B13	3.6	.C91	.C21	.0015	.231	34%	A D E F G H I J K L M N O P Q R S T U V W X
C039B	.061	173	D6	0.0	.091	.C22	.0016	.242	36%	A D E F G H I J K L M N O P Q R S T U W X
C021B	.059	55	E10	4.8	.092	.025	.0018	.272	42%	B D E F G H I J K L M N O P Q R S T U V W X
C111A	.209	100	EF15	1.2	.092	.C32	.0023	.348	15%	H I J K M N O P Q R S T U V W X
A005	.063	32	EF7	1.2	.094	.C27	.0020	.287	42%	F H I J K L M N P Q R S T U V W X
C101A	.210	300	BC9	3.6	.094	.032	.0C24	.340	15%	D H I J K L M N O P Q R S T U V W X
C042B	.069	55	EF13	3.6	.095	.C27	.0020	.284	39%	B D E F G H I J K L M N P Q R S U V W X
C086A	.206	35	CD9	3.6	.095	.C32	.0024	.337	15%	H I J K L M N O P R T U V W X
C108A	.209	150	B11	5.9	.095	.C36	.0C27	.379	17%	H I J K L M N O P Q R S T U V W X
C050B	.063	140	E8	2.4	.096	.021	.0016	.219	33%	A B F G H I J K L M N O P Q R S T U V W X
A017	.061	130	EF3	3.6	.C96	.C25	.0C19	.260	40%	H I J K M P Q R S U V W X
C069A	.209	50	B10	4.8	.096	.036	.0027	.375	17%	H I J K L M O P Q R S T U V W X
C039B	.061	173	D14	2.4	.097	.C25	.0C19	.258	40%	A D E F G H I J K L M N O P Q R S T U V W X
C086A	.206	35	B11	5.9	.097	.C28	.0C21	.289	13%	H I J K L M N O P R S T U V W X
C100A	.208	205	B13	3.6	.097	.C32	.0024	.330	15%	F G H I J K L M N O P R S T U V W X
C110A	.209	145	F8	2.4	.098	.C31	.0024	.316	14%	E H I J K L M N O P Q R S T U V W X
C094A	.210	140	D7	1.2	.098	.C35	.0027	.357	16%	C F H I J K L M N P S T U V W X
A011	.062	60	EF13	3.6	.098	.C36	.0028	.367	58%	A H I J K L M N O P Q R S T U V W X
C081A	.208	40	E11	5.9	.10C	.035	.0C27	.350	16%	D H I J K L M N O P R S T U V W X
C054A	.061	300	B15	1.2	.101	.C37	.0C29	.366	60%	A B C D E F G H I J K L M N O P Q R S T U V W X
C045B	.064	145	CD7	1.2	.102	.026	.0021	.255	40%	A B E F H I J K L M N O P Q R S T U V W X
C101A	.210	300	EF11	5.9	.103	.035	.0028	.340	16%	D E F G H I J K L M N O P Q S T U V W X
C074B	.208	45	CD9	3.6	.103	.036	.0029	.350	17%	D H I J K L M N P Q R S U V W X
A024	.057	230	FG7	1.2	.104	.021	.0017	.202	36%	A H K M N P Q R S T U V W X
C118A	.209	300	B13	3.6	.105	.C37	.0030	.352	17%	H I J K L M N O P Q R S T U V W X
C084A	.210	45	A11	5.9	.105	.C41	.0C34	.390	19%	D E H I J K L M N O P Q R S T U V W X
C101A	.210	300	BC12	4.8	.106	.035	.0029	.330	16%	D G H I J K L M N O P Q R S T U V W X
C070B	.206	45	D11	5.9	.106	.C38	.0C32	.358	18%	G H I J K L M N O P Q R S T U V W X
C047A	.059	160	E10	4.8	.108	.C33	.0028	.306	55%	A E G H I J K L M N O P Q R S T U V W X
C086A	.206	35	C7	1.2	.108	.041	.0035	.380	19%	H I J K L M N O P R S T U V W X
B024	.211	230	BC3	3.6	.109	.C27	.0023	.248	12%	H J K L M N Q R S T U V W X
A004	.063	30	BC12	4.8	.111	.034	.0030	.306	53%	A C H I J K L M N O P Q R S T U W X
C069A	.209	50	E11	5.9	.115	.042	.0038	.365	20%	H I J K L M N O P Q R S T U V W X
B004	.211	32	BC14	2.4	.116	.030	.0027	.259	14%	H J K L M N P Q R S T U X

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY FLAW LENGTH

C116A	.207	180	D11	5.9	.117	.C41	.0038	.350	19%	H I K L N O P Q R S T U V W X
C080A	.206	35	D15	1.2	.117	.042	.0039	.359	20%	H I J K L M N O P Q R S T U V W X
B024	.211	230	FG3	3.6	.118	.C31	.0029	.263	14%	H J K L M P Q R S T U V W X
C117A	.208	220	BC15	1.2	.119	.04C	.0037	.336	19%	E F G H I J K M N O P Q R S T U V W X
C065A	.196	50	BC10	4.8	.119	.C40	.0037	.336	20%	G H I J K L M N O P Q R S T U V W X
B005	.213	32	BC4	2.4	.121	.035	.C033	.289	16%	H I J K M P Q R S T U V W X
C068A	.209	45	C12	4.8	.122	.046	.0044	.377	22%	H I J K L M N O P R S T U V W X
B017	.212	130	FG10	4.8	.123	.C33	.0032	.268	15%	H I J K L M N O P Q R S T U V W X
A018	.061	130	CD2	4.8	.123	.C36	.0035	.293	59%	A D I L M N O P Q R S T U V W X
B006	.211	32	BC3	3.6	.124	.034	.0033	.274	16%	K L M O P Q R S T U V W X
B012	.221	60	BC14	2.4	.124	.038	.0C37	.306	17%	H I J K L M N P Q R S U V W X
C116A	.207	180	B14	2.4	.124	.044	.0043	.355	21%	E H I J K L M N O P Q R T U V W X
C080A	.206	35	D12	4.8	.124	.C46	.0045	.371	22%	H I J K L M N O P Q R S T U V W X
C064A	.209	60	F10	4.8	.125	.040	.0039	.320	19%	F G H I J K L N O P Q R S T U V W X
C097A	.210	145	D10	4.8	.126	.C57	.0056	.452	27%	F G H I J K L M N O P Q S T U V W X
A006	.062	32	FG3	3.6	.129	.C40	.0041	.310	64%	A C G H I J K M N O P Q R S U V W X
C074B	.208	45	E8	2.4	.129	.C49	.0050	.380	23%	H I J K L M N P Q R S T U W X
C080A	.206	35	DE7	1.2	.129	.051	.0052	.395	24%	H I J K L M N O P Q R S T U V W X
C117B	.208	220	F9	3.6	.129	.C58	.0C59	.450	27%	E F G H I J K L M N O P Q R T U W X
C100A	.208	205	B14	2.4	.131	.045	.0046	.344	21%	F G H I J K L M N O P R S U V W X
C069A	.209	50	E9	3.6	.131	.C49	.0C50	.374	23%	H I J K L M N O P R S T U V W X
C118A	.209	300	D8	2.4	.132	.05C	.0052	.379	23%	H I J K L M N O P Q R S T U V W X
B018	.210	130	BC4	2.4	.134	.037	.0C39	.276	17%	J K M O P S T U V W X
C108A	.209	150	D8	2.4	.134	.C48	.0050	.358	22%	H I J K L M N O P Q R S T U V W X
C070A	.206	45	EF15	1.2	.134	.C49	.0052	.366	23%	F G H I J K L M N O P Q R S T U V W X
B010	.224	60	EF4	2.4	.135	.C45	.0048	.333	20%	H I K M N P Q R S T U V W X
C081A	.208	40	F14	2.4	.135	.C5C	.0053	.370	24%	H I J K L M O P R S T U V W X
C084A	.210	45	EF13	3.6	.136	.C49	.0052	.360	23%	D H I J K L M N O P Q R S T U V W X
C102A	.211	300	E13	3.6	.136	.053	.0057	.390	25%	D E F H I K L M N O P Q R S T U V W X
B010	.224	60	FG13	3.6	.137	.C48	.0052	.350	21%	H I J K L M N P Q R S T U V W X
C086A	.206	35	DE15	1.2	.138	.050	.0054	.362	24%	H I J K L M N O P R S T U V W X
C101A	.210	300	F8	2.4	.14C	.052	.0057	.371	24%	D F H I J K L M N O P Q R S T U V W X
B016	.225	130	DE9	3.6	.14C	.C53	.0058	.379	23%	H I J K M O P Q R S T U V X
C102A	.211	300	C8	2.4	.141	.057	.0063	.404	27%	F H I J K L M N O P Q R S T U W X
B017	.212	130	CD14	2.4	.143	.C43	.0048	.301	20%	G J K M P Q R S T U X
B012	.221	60	EF11	5.9	.143	.C43	.0C48	.301	19%	H I J K L M P Q R S T U V W X
B011	.224	60	DE10	4.8	.144	.05C	.0057	.347	22%	E F G H I J K L M N O P Q R S T U V W X
B003	.223	32	DE9	3.6	.144	.052	.0059	.361	23%	G H J K L N O P S T U
B021	.227	230	DE9	3.6	.144	.055	.0062	.382	24%	H I J K L M N O P S T U V W X
B002	.225	32	BC10	4.8	.145	.053	.0060	.366	23%	H I J K L N O P Q R S T U V W X
C085A	.209	45	C15	1.2	.146	.054	.0062	.370	25%	H I J K L M N O P Q R S T U V W X
C103A	.208	140	D11	5.9	.148	.06C	.0070	.405	28%	E F G H I K L M N O P R S T U V W X
B015	.225	125	BC10	4.8	.149	.C54	.0063	.362	23%	H I J K N O P Q R S T U V W X
C006A	.059	55	BC10	4.8	.150	.028	.0033	.187	47%	A B C D H I K O P T U
C109A	.208	160	BC10	4.8	.151	.C59	.0070	.391	28%	E F G H I J K L M N O P Q R S T U V W X
C064A	.209	60	B13	3.6	.153	.054	.0065	.353	25%	F G H I J K L M N O P Q R S T U V W X
C094A	.210	140	D12	4.8	.153	.06C	.0072	.392	28%	F G H I J K L M N O P R S T U V W X
C085B	.209	45	E8	2.4	.153	.064	.0077	.418	30%	D G H I J K L O P Q R S T U V W X
B023	.227	230	EF14	2.4	.157	.C58	.0071	.369	25%	H I J K M N O P Q R S T U V W X
C074B	.208	45	DE11	5.9	.158	.C57	.0071	.361	27%	F H I J K L M N O P Q R S T U V W X
C094A	.210	140	D14	2.4	.162	.063	.0080	.389	30%	F G H I J K L M N O P S T U V W X
C111A	.209	100	BC14	2.4	.171	.067	.0090	.392	32%	E F G H I J K L M N O P Q R S T U V W X
C077A	.206	45	E8	2.4	.182	.071	.0101	.390	34%	H I J K L M N O P Q R S T U V W X
C117B	.208	220	E13	3.6	.183	.068	.0098	.372	32%	E F G H I J K L M N P Q R S T U W X

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY FLAW LENGTH

C110A	.209	145	B14	2.4	.185	.C74	.0107	.400	35%	A E F G H I J K L M N O P Q R S T U W X
B023	.227	230	DE10	4.8	.190	.064	.0095	.337	28%	H I J K M N O P Q R S T U V W X
A021	.051	230	EF8	2.4	.197	.C12	.0C19	.061	23%	A D E F G H K L M N P Q R S T U V W X
C022B	.057	55	D14	2.4	.241	.032	.0061	.133	56%	A B D E F G H I J K L M N O P Q R S T U V W X
C001A	.052	085	D11	5.9	.242	.C25	.0047	.103	48%	A B C E F G H I J K L M O P Q R T U W X
C005A	.061	45	C6	0.0	.247	.C36	.0070	.146	59%	A B C D E F G H I J K L M N O P Q R S T U V W X
C005B	.061	45	E14	2.4	.247	.C43	.0083	.174	70%	A B C D E F G H I J K L M N O P Q R S T U V W X
C016A	.059	50	E9	3.6	.248	.03C	.0058	.121	50%	A B C D E F G H I J K L M N O P Q R S T U V W X
C031A	.060	150	E6	0.0	.249	.032	.0063	.129	53%	A D E F G H I J K L M N O P Q R S T U V W X
C031A	.060	150	B14	2.4	.249	.C33	.0065	.133	54%	A B C D E F G H I J K L M N O P Q R S T U V W X
C078A	.207	40	C7	1.2	.25C	.C36	.0071	.144	17%	B E F H I J K L M N O P Q R S T U V W X
C029A	.059	120	D10	4.8	.252	.C36	.0071	.143	61%	A B C D E F G H I J K L M N O P Q R S T U V W X
C016A	.059	50	DE5	1.2	.253	.C31	.0062	.123	52%	A B C D E F G H I J K L M N O P Q R S T U V W X
C043A	.057	160	DE5	1.2	.256	.035	.0070	.137	61%	A B C D E F G H I J K L M N O P Q R S T U V W X
C016A	.059	50	DE13	3.6	.257	.033	.0067	.128	55%	A B C D E F G H I J K L M N O P Q R S T U V W X
C046A	.060	150	C6	0.0	.257	.035	.0C71	.136	58%	A B C D E F G H I J K L M N O P Q R S T U V W X
C022A	.057	55	C10	4.8	.258	.C33	.0067	.128	57%	A B C D E F G H I J K L M N O P Q R S T U V W X
C043A	.057	160	DE13	3.6	.258	.C35	.0071	.136	61%	A B C D E F G H I J K L M N O P Q R S T U V W X
C005A	.061	45	C10	4.8	.258	.C35	.0071	.136	57%	A B C D E F G H I J K L M N O P Q R S T U V W X
C008A	.058	50	D6	0.0	.259	.C35	.0071	.135	60%	A B C D E F G H I J K L M N O P Q R S T U V W X
C043A	.057	160	E9	3.6	.26C	.C33	.0C67	.127	57%	A B C D E F G H I J K L M N O P Q R S T U V W X
C046B	.060	150	E10	4.8	.261	.033	.0C68	.126	54%	A B C D E F G H I J K L M N O P Q R S T U V W X
C046A	.060	150	C14	2.4	.261	.C37	.0C76	.142	61%	A B C D E F G H I J K L M N O P Q R S T U V W X
C049A	.061	200	DE14	2.4	.262	.037	.0C76	.141	60%	A B C D E F G H I J K L M N O P Q R S T U V W X
C035A	.061	220	D9	3.6	.268	.C35	.0074	.131	57%	A B D E F G H I J K L M N O P Q R S T U V W X
C001B	.052	085	D18	2.4	.269	.C39	.0082	.145	75%	A B C D E F G H I J K L M N O P Q R S T U V W X
C008A	.058	50	C14	2.4	.275	.C34	.0073	.124	58%	A B C D E F G H I J K L M N O P Q R S T U V W X
C049A	.061	200	CD6	0.0	.279	.037	.0081	.133	60%	A B C E F G H I J K L M N O P Q R S T U V W X
C001B	.052	085	D6	0.0	.279	.038	.0083	.136	73%	A B E F G H I J K L M N O P Q R S T U V W X
C079A	.211	55	BC12	4.8	.283	.1C9	.0242	.385	51%	E H I J K L M N O P Q R S T U V X
C022B	.057	55	C6	0.0	.287	.C38	.0086	.132	66%	A B C D E F G H I J K L M N O P Q R S T U V W X
A016	.058	125	DE7	1.2	.288	.034	.0077	.118	58%	A B C D E F G H I J K L M N O P Q R S T U V W X
C056A	.207	40	D6	0.0	.290	.C31	.0C71	.107	14%	B E F G H I J K L M N O P Q R T U V W X
A016	.058	125	EF10	4.8	.290	.C36	.0082	.124	62%	A B C D E F G H I J K L M N O P Q R S T U W X
C092A	.209	160	E10	4.8	.295	.C47	.0109	.159	22%	F G H I J K L M N O P Q R S T U V W X
A012	.056	60	DE11	5.9	.296	.C26	.0060	.088	46%	A B C D E G H I J K M N O P Q R S T U W X
C092B	.209	160	D14	2.4	.298	.C37	.0C87	.124	17%	E F G H I J K L M N O P Q R S T U V W X
C092B	.209	160	C7	1.2	.301	.C34	.0080	.113	16%	E F G H I J K L M N O P Q R S T U V W X
C107A	.210	140	EF7	1.2	.304	.C36	.0086	.116	17%	E H I J K L M N O P Q R S T U V W X
C106A	.209	160	F10	4.8	.306	.040	.0096	.131	19%	A B E F G H I J K L M N P Q R S T U W X
C058A	.208	40	DE15	1.2	.31C	.034	.0083	.110	16%	D F I J K L M N O P Q R S T U V W X
C088A	.197	150	EF15	1.2	.310	.C49	.0119	.158	24%	E F G H I K L M N O P Q R S T U V W X
C106A	.209	160	BC6	0.0	.312	.C25	.0C61	.080	11%	F H I J K L M N O P Q R S T U V W X
C096A	.207	180	BC6	0.0	.313	.044	.0108	.141	21%	A E F G H I J K L M N O P Q S T U V W X
C059B	.208	035	E10	4.8	.313	.C54	.0133	.173	25%	E F G H I J K L M N O P Q R S T U V W X
C075B	.210	55	EF15	1.2	.317	.C51	.0127	.161	24%	H I J K L M O P Q R S T U V W X
A003	.054	32	BC8	2.4	.318	.C36	.0090	.113	66%	A B C D E F G H I J K L M N O P Q R S T U V W X
C059A	.208	035	C14	2.4	.318	.C52	.0130	.164	25%	A B F H I J K L M N O P Q R S T U V W X
C075B	.210	55	C7	1.2	.321	.053	.0134	.165	25%	A B H I J K L M O P Q R S T U V W X
C095A	.208	190	C10	4.8	.322	.044	.0111	.137	21%	A B D F H I J K L M N O P Q S T U W X
C057A	.208	35	DE14	2.4	.323	.044	.0112	.136	21%	E F G H I J K L M N O P Q R S T U V W X
A018	.061	130	CD12	4.8	.326	.044	.0113	.135	72%	A B C D E G I J K L M N O P Q R S T U V W X
C058A	.208	40	E7	1.2	.326	.048	.0123	.147	23%	F H I J K L M N O P Q R S T U V W X
C072A	.207	50	E6	0.0	.326	.1C5	.0269	.322	50%	A E F G H I J K L M N O P Q R S T U V W X

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY FLAW LENGTH

C095A	.208	190	BC14	2.4	.328	.051	.0131	.155	24%	H I J K L M N O P Q R S T U V W X
C088A	.197	150	E11	5.9	.329	.053	.0137	.161	26%	F G H I J K L M N O P Q R S T U V W X
C057A	.208	35	E6	0.0	.330	.053	.0137	.161	25%	A D E F G H I J K L M N O P Q R S T U V W X
C106A	.209	160	BC14	2.4	.331	.043	.0112	.130	20%	E F G H I J K L M N O P Q R S T U V W X
C058A	.208	40	EF11	5.9	.331	.044	.0114	.133	21%	E F G H I J K L M N O P Q R S T U V W X
C063A	.212	30	C10	4.8	.333	.063	.0165	.189	29%	D E F G H I J K L M N O P Q R S T U V W X
A024	.057	230	CD12	4.8	.334	.040	.0105	.120	70%	A B C D H I J K M N O P Q R T U V W X
C056A	.207	40	D14	2.4	.336	.059	.0156	.176	28%	B F G H I J K L M N O P Q R T U V W X
C095A	.208	190	E6	0.0	.338	.060	.0159	.178	28%	A B H I J K M O P Q S T U X
A004	.063	30	DE9	3.6	.340	.032	.0085	.094	50%	A B C D H I J K O P T U
A012	.056	60	CD7	1.2	.340	.036	.0096	.106	64%	A B C D G H I J K M N O P Q R S T U V W X
C063A	.212	30	D14	2.4	.340	.063	.0168	.185	29%	A B C E F G H I J K L M N O P Q R S T U V W X
C008B	.058	50	C10	4.8	.342	.041	.0110	.120	70%	A B C D E F G H I J K L M N O P Q R S T U V W X
A014	.064	125	CD14	2.4	.342	.044	.0118	.129	68%	A B C D E F G H I K L M N P Q R S T U V W X
C114A	.208	250	BC15	1.2	.342	.062	.0166	.181	29%	A B C D E F G H I J K L M N O P Q R S T U V W X
C059A	.208	035	D6	0.0	.345	.057	.0154	.165	27%	A B C D E F G H I J K L M N O P Q R S T U V W X
C096A	.207	180	E10	4.8	.347	.059	.0161	.170	28%	A E F G H I J K L M N O P Q S T U V W X
A024	.057	230	DE9	3.6	.352	.042	.0116	.119	73%	A B C D G H I J K M N O P Q R S T U V W X
A011	.062	60	EF6	0.0	.352	.042	.0116	.119	67%	A B C D E F G H I J K L M N O P Q R S T U V W X
A022	.061	230	EF7	1.2	.356	.054	.0151	.152	88%	A B C D E F G H I J K L M N O P Q R S T U V W X
A011	.062	60	CD9	3.6	.362	.044	.0125	.122	70%	A B C D E F G H I J K L M N O P Q R S T U V W X
A010	.060	60	CD8	2.4	.362	.046	.0131	.127	76%	A B C D E H I J K L M N O P Q R S T U V W X
C057A	.208	35	EF10	4.8	.362	.050	.0142	.138	24%	F H I J K L M N O P Q R S T U V W X
A006	.062	32	CD6	0.0	.370	.046	.0134	.124	74%	A B C D E F G H I J K M N O P Q R S T U V W X
A006	.062	32	DE11	5.9	.370	.048	.0139	.130	77%	A B C D F G H I J K M N O P Q R S T U V W X
A018	.061	130	CD9	3.6	.372	.046	.0134	.124	75%	A B C D F G I J K L M N O P Q R S T U V W X
A023	.059	230	CD10	4.8	.372	.046	.0134	.124	77%	A B C D H I J K O P T U
C063A	.212	30	DE6	0.0	.381	.076	.0227	.199	35%	A B D F G H I J K L M N O P Q R S T U V W X
A005	.063	32	CD11	5.9	.384	.046	.0139	.120	73%	A B C D F G H I J K L M N O P Q R S T U V W X
C096A	.207	180	B14	2.4	.393	.077	.0238	.196	37%	A B C D E F G H I J K M N O P Q R S T U V W X
C056B	.207	40	D10	4.8	.408	.058	.0186	.142	28%	B E F G H I J K L M N P Q R S T U V W X
B017	.212	130	EF5	1.2	.426	.054	.0181	.127	25%	H I J K L M N O P Q R S T U V W X
B005	.213	32	CD9	3.6	.442	.056	.0194	.127	26%	A B C D E G H I J K M N O P Q R S T U V X
B022	.212	230	CD4	2.4	.444	.080	.0279	.180	37%	A B C D H I J K L M N O P Q R S T U V W X
B018	.210	130	BC7	1.2	.458	.084	.0302	.183	39%	A B C D H I J K L M N O P Q R S T U V W X
B018	.210	130	FG9	3.6	.458	.090	.0324	.197	42%	A B C D E G H I J K L M N O P Q R S T U V X
C066A	.206	50	E7	1.2	.459	.107	.0386	.233	51%	A B D E F G H I J K L M N O P Q R S T U V W X
B009	.223	60	CD8	2.4	.460	.064	.0231	.139	28%	A B C D G H I J K L M N O P Q R S T U V W X
B022	.212	230	FG8	2.4	.466	.096	.0351	.206	45%	A B C D E F G H I J K L M N O P Q R S T U V W X
C105B	.209	140	D11	5.9	.466	.109	.0399	.234	52%	A B C D E F G H I J K L M N O P Q R S T U V W X
B023	.227	230	BC11	5.9	.470	.098	.0362	.209	43%	A B C D E H I J K M N O P Q R S T U V W X
B024	.211	230	DE6	0.0	.472	.124	.0459	.263	58%	A B C D E F G H I J K M N O P Q R S T U V W X
B017	.212	130	CD8	2.4	.474	.114	.0424	.241	53%	A B C D E F G H I J K M N O P Q R S T U V W X
B006	.211	32	EF9	3.6	.474	.128	.0476	.270	60%	A B C D E F G H I J K L M N O P Q R S T U X
C060B	.209	60	E10	4.8	.475	.108	.0403	.227	51%	E F G H I J K L M N P Q R S T U V W X
B009	.223	60	EF10	4.8	.478	.080	.0300	.167	35%	A B C D E F G H I J K L M N O P Q R S T U V W X
B020	.226	230	EF7	1.2	.478	.086	.0323	.180	38%	A B C D E G H I J K L M N O P Q R S T U V W X
B012	.221	60	EF6	0.0	.478	.126	.0473	.264	57%	A B C D E F G H I J K L M N O P Q R S T U V W X
B004	.211	32	DE5	1.2	.478	.128	.0480	.268	60%	A B C D E F G H I J K L M N O P Q R S T U V W X
B005	.213	32	EF7	1.2	.482	.136	.0515	.282	63%	A B C D E F G H I J K L M N O P Q R S T U V X
C076A	.211	50	B11	5.9	.484	.111	.0422	.229	52%	A B D E F G H I J K L M N O P Q R S T U V W X
C066B	.206	50	D11	5.9	.489	.107	.0411	.219	51%	A B D E F G H I J K L M N O P Q R S T U V W X
B015	.225	125	EF7	1.2	.490	.144	.0554	.294	63%	A B C D E F G H I J K M N O P Q R S T U V W
C093B	.208	150	D11	5.9	.492	.107	.0413	.217	51%	C D E F G H I J K L M N O P S T U W X

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY FLAW LENGTH

B006	.211	32	CD7	1.2	.492	.130	.0502	.264	61%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C078A	.207	40	D15	1.2	.494	.106	.0411	.215	51%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C071A	.206	35	B7	1.2	.495	.097	.0377	.196	47%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C105A	.209	140	D15	1.2	.495	.108	.0420	.218	51%	A B C D F G	H I J K L M N	O P Q R S	T U V W X
B011	.224	60	BC11	5.9	.496	.116	.0452	.234	51%	A B C D	H I J K L M N	O P Q R S	T U V W X
C074B	.208	45	BC7	1.2	.496	.178	.0693	.359	85%	A B C D E F	H I K L M N	O P Q R S	T U V W X
B018	.210	130	CD16	0.0	.498	.088	.0344	.177	41%	A B D	H I J K L M	P Q R S	T U V W X
C113A	.210	280	BC10	4.8	.499	.114	.0447	.228	54%	D E F G	H I J K L M N	O P Q R S	T U W X
C091B	.205	145	BC11	5.9	.500	.103	.0404	.206	50%	A B D E F G	H I J K L M N	O P Q S	T U V W X
C107A	.210	140	D11	5.9	.503	.109	.0430	.217	51%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B024	.211	230	EF10	4.8	.504	.094	.0372	.187	44%	A B C D E	H I J K L M N	O P Q R S	T U V W X
B005	.213	32	DE13	3.6	.506	.092	.0365	.182	43%	A B C D	H I J K L M N	O P Q R S	T U V X
B022	.212	230	BC13	3.6	.506	.094	.0373	.186	44%	A B C D F G	H I J K L M N	O P Q R S	T U V W X
B006	.211	32	EF5	1.2	.508	.092	.0367	.181	43%	A B C D E F	H I J K L M N	O P Q R S	T U V W X
C066A	.206	50	C15	1.2	.508	.110	.0439	.217	53%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C113A	.210	280	E14	2.4	.509	.119	.0475	.234	56%	A B C D E F G	H I J K L M N	O P Q R S	T U W X
B004	.211	32	DE9	3.6	.510	.094	.0376	.184	44%	A B C D E F	H I J K L M N	O P Q R S	T U V W X
B024	.211	230	BC13	3.6	.512	.090	.0362	.176	42%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B011	.224	60	EF13	3.6	.512	.104	.0418	.203	46%	A B C D	H I J K M N	O P Q R S	T U W X
C104B	.210	280	BC11	5.9	.513	.109	.0439	.212	51%	D E F G	H I J K L M N	O P Q R S	T U V W X
C113A	.210	280	BC6	0.0	.514	.111	.0448	.216	52%	A B C D E F G	H I J K L M N	O P Q R S	T U W X
C071A	.206	35	D15	1.2	.518	.096	.0390	.185	46%	A B C E F G	H I J K L M N	O P Q R S	T U V W X
C060A	.209	60	C14	2.4	.519	.110	.0448	.212	52%	A B D E F G	H I J K L M N	O P Q R S	T U V W X
B016	.225	130	DE12	4.8	.520	.106	.0433	.204	47%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C112A	.207	175	D10	4.8	.520	.109	.0445	.210	52%	A D E F G	H I J K L M N	O P Q R S	T U V W X
B008	.226	60	DE7	1.2	.520	.114	.0465	.219	50%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C112A	.207	175	F6	0.0	.521	.112	.0458	.215	54%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B014	.221	130	DE7	1.2	.522	.108	.0443	.207	48%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C072B	.207	50	E14	2.4	.523	.114	.0468	.218	55%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B006	.211	32	FG13	3.6	.524	.092	.0378	.176	43%	A B C D G	H I J K L M N	O P Q R S	T U V X
B003	.223	32	BC11	5.9	.526	.106	.0438	.202	47%	A B C D F	H I J K L M N	O P Q R S	T U V X
B012	.221	60	DE9	3.6	.530	.106	.0441	.200	47%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B011	.224	60	CD5	1.2	.530	.108	.0449	.204	48%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B016	.225	130	CD4	2.4	.534	.106	.0444	.199	47%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B012	.221	60	CD3	3.6	.534	.108	.0453	.202	48%	A B C D G	H I J K L M N	O P Q R S	T U V W X
B023	.227	230	DE5	1.2	.534	.110	.0461	.206	48%	A B C D G	H I J K M N	O P Q R S	T U V W X
C060A	.209	60	C6	0.0	.535	.114	.0479	.213	54%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C093A	.208	150	D7	1.2	.535	.116	.0487	.217	55%	A B C D E F G	H I J K L M N	O P S	T U W X
B021	.227	230	FG6	0.0	.538	.112	.0473	.208	49%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C062B	.210	40	E11	5.9	.539	.115	.0487	.213	54%	A B D E F G	H I J K L M N	O P Q R S	T U V W X
C105A	.209	140	C7	1.2	.543	.116	.0494	.214	55%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B010	.224	60	CD8	2.4	.550	.110	.0475	.200	49%	A B C D E F G	H I J K M N	O P Q R S	T U V W X
C087A	.209	160	BC6	0.0	.559	.115	.0505	.206	55%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C072A	.207	50	E10	4.8	.568	.117	.0522	.206	56%	A B E F G	H I J K L M N	O P Q R S	T U V W X
C093A	.208	150	E15	1.2	.610	.126	.0603	.207	60%	A B C D E F G	H I J K L M N	O P S	T U V W X
C087A	.209	160	BC14	2.4	.710	.126	.0702	.177	60%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C104A	.210	280	D15	1.2	.979	.149	.1145	.152	70%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X

ROCKWELL INTERNATIONAL
SPACE DIVISION
NONDESTRUCTIVE EVALUATION TECHNOLOGY GROUP
DEPARTMENT 044-130 QUALITY ENGINEERING
FLAW SENSITIVITY EVALUATION

SORTED BY FLAW DEPTH

SAMPLE NUMBER	THICK	FINISH	LOCATION	INCLO ANGLE	LENGTH (2C)	DEPTH (A)	AREA	A/2C	A/T	X-RAY A B C D E F G	PENETRANT H I J K L M N	ULTRASONIC O P Q R S	E/C T U V W X
C018A	.061	50	D6	0.0	.007	.001	.0000	.143	1%				
C025A	.061	45	BC14	2.4	.031	.002	.0000	.065	3%		L M	O P Q R S	
C041A	.060	260	E11	5.9	.015	.003	.0000	.200	5%			R	
C014A	.061	40	DE12	4.8	.017	.003	.0000	.176	4%			O	
C041A	.060	260	D7	1.2	.018	.003	.0000	.167	5%			O R	
C018A	.061	50	B14	2.4	.025	.003	.0001	.120	4%		I K L	O P R S	
C044A	.060	140	C6	0.0	.025	.003	.0001	.120	5%			O	
C021A	.059	55	C7	1.2	.010	.004	.0000	.400	6%		H J	O	
C042A	.069	55	D11	5.9	.011	.004	.0000	.364	5%	D	H K M N	P Q R S	T W
C053A	.061	240	E11	5.9	.021	.004	.0001	.190	6%	G	H J K M	O P R S	
C018B	.061	50	BC14	2.4	.021	.004	.0001	.190	6%		K L	P R S	
C019A	.058	60	B8	2.4	.030	.004	.0001	.133	6%	A B	H I K L N	P R S	
C077B	.206	45	C13	3.6	.020	.005	.0001	.250	2%				
C054A	.061	300	CD11	5.9	.020	.005	.0001	.250	8%				
A003	.054	32	EF11	5.9	.027	.005	.0001	.185	9%				
C052A	.061	180	EF10	4.8	.035	.005	.0001	.143	8%		H J K M N	O P Q R S	W X
C018B	.061	50	CD13	3.6	.035	.006	.0002	.171	9%	D F	K L M	P Q R S	W
C045A	.064	145	DE14	2.4	.041	.006	.0002	.146	9%	E G	H I K L M N	O P Q R	W
C052A	.061	180	CD11	5.9	.049	.006	.0002	.122	9%		H I K M N	O P Q R S	W X
A004	.063	30	EF6	0.0	.022	.007	.0001	.318	11%	E F G	L M N	Q R S	V W X
C084A	.210	45	E6	0.0	.028	.007	.0002	.250	3%	G	I L M	O P R S	U
A016	.058	125	BC3	3.6	.034	.007	.0002	.206	12%				
C073B	.209	045	B11	5.9	.035	.007	.0002	.200	3%		H I L	P S	
C052A	.061	180	EF12	4.8	.041	.007	.0002	.171	11%		H I J K M N	O P Q R S	W X
C011A	.062	40	D6	0.0	.044	.007	.0002	.159	11%		H I K L M N	O P Q R S	U W
C045A	.064	145	CD12	4.8	.045	.007	.0002	.156	10%	G	H K L M N	O P Q R S	W
C103B	.208	140	BC9	3.6	.017	.008	.0001	.471	3%		H J L M	P Q	
C068A	.209	45	C7	1.2	.030	.008	.0002	.267	3%		H I J L M	O P R S	
C028A	.059	50	D15	1.2	.032	.008	.0002	.250	13%	D	I J K L M	O P	T
C030A	.060	160	C6	0.0	.045	.008	.0003	.178	13%		H I J K L M N	O P Q R S	V W
A023	.059	230	FG3	3.6	.048	.008	.0003	.167	13%				
C020A	.059	40	E7	1.2	.032	.009	.0002	.281	15%		H I K L M	O P Q R S	U
C025A	.061	45	B10	4.8	.030	.010	.0002	.333	16%		H L M	O P Q R S	
C017A	.057	60	B15	1.2	.040	.010	.0003	.250	17%		H K L M N	O P R	V W X
C100A	.208	205	F6	0.0	.040	.010	.0003	.250	4%	E F G	H I L M N	Q S	T V W X
C042B	.069	55	BC8	2.4	.055	.010	.0004	.182	14%	B	H I J K L M N	O P Q R S	V W X
C045B	.064	145	D9	3.6	.061	.010	.0005	.164	15%	E F	H I K M N	O P Q R S	U W
C068A	.209	45	CD15	1.2	.038	.011	.0003	.289	5%		H I K L M	O P R S	
C055A	.054	300	B15	1.2	.041	.011	.0004	.268	20%		H I J K M	O P Q R	U W
C100A	.208	205	B8	2.4	.041	.011	.0004	.268	5%		H I		
C077A	.206	45	E9	3.6	.045	.011	.0004	.244	5%		K L M N	O P Q R S	U V W X
C044B	.060	140	CD8	2.4	.052	.011	.0004	.212	18%	D E F	H J K L M N	O P Q R S	V W
C044B	.060	140	BC12	4.8	.058	.011	.0005	.190	18%		H L M N	O Q R S	T W

Space Division
Rockwell International

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY FLAW DEPTH

C003B	.059	45	D10	4.8	.058	.011	.0005	.190	18%	G H I J K L M N O P Q R S U W
C030A	.060	160	C12	4.8	.061	.011	.0005	.180	18%	G H I J K L M N O P Q R S T U V W X
C011A	.062	40	D12	4.8	.062	.011	.0005	.177	17%	E H I K L M N O P Q R S U V W X
C039B	.061	173	F12	4.8	.065	.011	.0006	.169	18%	H I J K M N O P Q R S T U V W X
C030A	.060	160	BC13	3.6	.077	.011	.0007	.143	18%	G H I J K L M N O P Q R S T U V W X
C003A	.059	45	EF12	4.8	.079	.011	.0007	.139	18%	A B E G H J K L M N P Q R S T U V W X
C015B	.061	045	BC13	3.6	.051	.012	.0005	.235	19%	A F G H I J K N P Q R S T U W X
C014A	.061	40	CD15	1.2	.068	.012	.0006	.176	19%	A D H I J K L M N O P Q R S T U V W
A021	.051	230	EF8	2.4	.197	.012	.0019	.061	23%	A D E F G H K L M N P Q R S T U V W X
C027A	.059	50	B15	1.2	.048	.013	.0005	.271	22%	E F H I J K L M N O P Q R S U V W
C116A	.207	180	B6	0.0	.057	.013	.0006	.228	6%	I J K L N O P Q U W X
A012	.056	60	DE6	0.0	.062	.013	.0006	.210	23%	L M P T U W X
C015B	.061	045	EF9	3.6	.062	.013	.0006	.210	21%	F H I J K N P Q R S T U V W X
C039B	.061	173	C11	5.9	.063	.013	.0006	.206	21%	B D E F G H I J K L M N O P Q R S T U V W X
A017	.061	130	DE11	5.9	.064	.013	.0007	.203	21%	M Q R S U W X
C011A	.062	40	D9	3.6	.065	.013	.0007	.200	20%	H I J K L M N O P Q R S T U V W X
C039B	.061	173	B8	2.4	.067	.013	.0007	.194	21%	A B E F G H I J K L M N O P Q R S T U W
C039B	.061	173	E9	3.6	.068	.013	.0007	.191	21%	A E F G H I J K M N O P Q P S T U V W X
C047B	.059	160	C8	2.4	.036	.014	.0004	.389	23%	F H I J K L M N P Q R S U W
C116A	.207	180	F6	0.0	.042	.014	.0005	.333	6%	H I J O P Q S U W X
C073A	.209	045	F9	3.6	.046	.014	.0005	.304	6%	H I L M N O P R S V
A018	.061	130	FG7	1.2	.055	.014	.0006	.255	22%	I L M N Q R S U V W X
C015A	.061	045	D11	5.9	.056	.014	.0006	.250	22%	A D E F G H I J K N O P Q R T U W X
A024	.057	230	BC7	1.2	.064	.014	.0007	.219	24%	K M N P Q R S T U
C002A	.058	60	EF11	5.9	.067	.014	.0007	.209	24%	F G H I J K L M N O P R S U W X
C012A	.062	35	F6	0.0	.077	.014	.0008	.182	22%	A D H I K L M N O P Q R S T U V W X
C013A	.059	35	E9	3.6	.077	.014	.0008	.182	23%	B E F G H I J K L M O P Q R S T U V W X
C020A	.059	40	BC11	5.9	.047	.015	.0006	.319	25%	A B C E F G H I J K L M N O P Q R S U V W
C074B	.208	45	C13	3.6	.054	.015	.0006	.278	7%	H K L M N O P R S T U X
A015	.059	125	EF5	1.2	.059	.015	.0007	.254	25%	L M Q R S T U V
C045B	.064	145	EF14	2.4	.067	.015	.0008	.224	23%	G H I K L M N P Q R S U W X
C053A	.061	240	B8	2.4	.069	.015	.0008	.217	24%	D E F G H I J K L M N O P Q R S U W X
A012	.056	60	EF9	3.6	.069	.015	.0008	.217	26%	G M P Q S T U V W X
C003B	.059	45	D14	2.4	.074	.015	.0009	.203	25%	E H I J K L M N O P Q R S T U W X
C014A	.061	40	F7	1.2	.077	.015	.0009	.195	24%	H I J K L M N O P Q R S U V W
C019B	.058	60	E10	4.8	.079	.015	.0009	.190	25%	A B C D E F G H I K L M N O P Q R S T U V W X
C019B	.058	60	F15	1.2	.083	.015	.0010	.181	25%	A D E F G H I K L M N O P Q R S T U V W X
C084A	.210	45	C8	2.4	.049	.016	.0006	.327	7%	G H I K L M O P R S U X
C101A	.210	300	CD14	2.4	.055	.016	.0007	.291	7%	D H J K L M O P S U W X
A002	.059	30	CD13	3.6	.068	.016	.0009	.235	27%	H I K L M P Q R S U V X
C019B	.058	60	E12	4.8	.070	.016	.0009	.229	27%	E F G H I K L M N O P Q R S T U V W
C018A	.061	50	C11	5.9	.072	.016	.0009	.222	26%	E F G H I J K L M O P Q R S T U V W
C044A	.060	140	BC10	4.8	.026	.017	.0003	.654	28%	E F G J L M N P Q R S T V W X
C044A	.060	140	B14	2.4	.033	.017	.0004	.515	28%	H K M N O P Q R U
C047A	.059	160	DE15	1.2	.047	.017	.0006	.362	28%	E H I L M N O P Q R S U V W
C033A	.059	150	DE14	2.4	.049	.017	.0007	.347	28%	H M N O Q R U V W
C100A	.208	205	EF9	3.6	.055	.017	.0007	.309	8%	H T
A017	.061	130	EF7	1.2	.065	.017	.0009	.262	27%	M Q R S U V W X
C036A	.061	140	BC12	4.8	.073	.017	.0010	.233	27%	A D E F G H I J K L M N O P Q R S T U V W X
C019A	.058	60	C13	3.6	.086	.017	.0011	.198	29%	A B C D E F G H I K L M N P Q R S T V W X
C052A	.061	180	BC14	2.4	.090	.017	.0012	.189	27%	A B D E F G H I J K L M N O P Q R S T U V W X
C048A	.059	160	B10	4.8	.045	.018	.0006	.400	30%	A D G H I J K L M N O P Q R S U V W
C109B	.208	160	EF12	4.8	.066	.018	.0009	.273	8%	E H J K O P Q R T U V W X
A023	.059	230	CD5	1.2	.069	.018	.0010	.261	30%	H J K L M N U V W X

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY FLAW DEPTH

C025A	.061	45	D8	2.4	.079	.018	.0011	.228	29%	A B D F G H I K L M N O P Q R S U V W X
C007A	.059	50	EF7	1.2	.087	.018	.0012	.207	30%	C F G H K L M N O P Q R S T U V W X
C068A	.209	45	F9	3.6	.061	.019	.0009	.311	9%	H I J L M N O P R S T U V W X
A006	.062	32	DE8	2.4	.081	.019	.0012	.235	30%	M P Q R S U V X
A020	.060	230	CD14	2.4	.085	.019	.0013	.224	31%	F H I L M N P Q R S T U V W X
C019B	.058	60	F7	1.2	.086	.019	.0013	.221	32%	D E F G H I K L M N O P Q R S T U W X
C048A	.059	160	EF9	3.6	.026	.020	.0004	.769	33%	A E G H I J K L M N O P Q R S U V W X
C034A	.059	80	BC8	2.4	.058	.020	.0009	.345	33%	A D F H I K L M N O P Q R S T U W
C028B	.059	50	BC11	5.9	.059	.020	.0009	.339	33%	G H I J K P Q R T V W
C069A	.209	50	E7	1.2	.066	.020	.0010	.303	9%	H I J K L M N O P R S T U V W
C003A	.059	45	EF9	3.6	.082	.020	.0013	.244	33%	E F G H I J K L M N P Q R S T U V W X
C006A	.059	55	E9	3.6	.084	.020	.0013	.238	33%	H I K P T U
C052A	.061	180	B9	3.6	.086	.020	.0014	.233	32%	A B E F G H I J K L M N O P Q R S T U V W X
A023	.059	230	DE15	1.2	.089	.020	.0014	.225	33%	H I J K L M N P T U V W X
C025A	.061	45	FG12	4.8	.015	.021	.0002	****	34%	
C033A	.059	150	EF10	4.8	.060	.021	.0010	.350	35%	E H I J K L M N O P Q R S T U W X
C047B	.059	160	B11	5.9	.062	.021	.0010	.339	35%	E H I J K L M N P Q R S U V W
C054B	.061	300	E17	1.2	.063	.021	.0010	.333	34%	A B C D H I J K L M N O P Q R S T U V W X
C069A	.209	50	E13	3.6	.064	.021	.0011	.328	10%	H J K L M N O P R S T U V W X
C084A	.210	45	A10	4.8	.069	.021	.0011	.304	9%	E I K L M N O P Q R S U V W X
A022	.061	230	BC13	3.6	.069	.021	.0011	.304	34%	I J K P Q R S T U
A005	.063	32	BC2	4.8	.075	.021	.0012	.280	33%	H J L M N Q R S T U V X
A010	.060	60	BC15	1.2	.078	.021	.0013	.269	35%	A B D H I J K L M N P Q R S T U W X
C041A	.060	260	CD15	1.2	.080	.021	.0013	.263	35%	F G H I J K L M N O P R S T U V W X
A024	.057	230	BC2	4.8	.084	.021	.0014	.250	36%	N P Q R S T U V
C018A	.061	50	B13	3.6	.091	.021	.0015	.231	34%	A D E F G H I J K L M N O P Q R S T U V W X
C050B	.063	140	E8	2.4	.096	.021	.0016	.219	33%	A B F G H I J K L M N O P Q R S T U V W X
A024	.057	230	FG7	1.2	.104	.021	.0017	.202	36%	A H K M N P Q R S T U V W X
C055B	.054	300	B8	2.4	.069	.022	.0012	.319	40%	D E F G H I J K L M N P Q R S T U V W X
C116A	.207	180	B9	3.6	.072	.022	.0012	.306	10%	H I J K L N O P Q R T U W X
A009	.059	60	EF5	1.2	.073	.022	.0013	.301	37%	H J K L M P Q R S T U V W X
A008	.059	60	EF8	2.4	.080	.022	.0014	.275	37%	H I J K L M N P Q R S T U V W X
C070A	.206	45	BC7	1.2	.087	.022	.0015	.253	10%	E H I J K L M N O P R S T U V W X
A017	.061	130	BC15	1.2	.089	.022	.0015	.247	36%	H I J K M P Q R S U V W X
C039B	.061	173	D6	0.0	.091	.022	.0016	.242	36%	A D E F G H I J K L M N O P Q R S T U W X
C068A	.209	45	B10	4.8	.064	.023	.0012	.359	11%	H I J K L M N O P R S T U W X
C101A	.210	300	C6	0.0	.064	.023	.0012	.359	10%	D H I J K L M N O P Q R U X
C108A	.209	150	F11	5.9	.070	.023	.0013	.329	11%	H O P S T U
C073A	.209	045	E14	2.4	.071	.023	.0013	.324	11%	H I K L M N O P Q R S T U V W
A010	.060	60	EF3	3.6	.075	.023	.0014	.307	38%	H I J K L M N P Q R S T U V W X
C033B	.059	150	CD8	2.4	.062	.024	.0012	.387	40%	A E F G H I J K L M O P Q R S T U V W
C034A	.059	80	BC16	0.0	.062	.024	.0012	.387	40%	A B E F G H I K L M N O P Q R S T U V W
C109A	.208	160	BC14	2.4	.063	.024	.0012	.381	11%	H I J K L M N O P Q R S U V X
C009A	.057	50	CD6	0.0	.066	.024	.0012	.364	42%	E G H I J K L M N O P Q R S T U V W X
A006	.062	32	EF13	3.6	.067	.024	.0013	.358	38%	E J K M N P Q R S U V W X
C108A	.209	150	D15	1.2	.073	.024	.0014	.329	11%	H I J K L M N O P Q R S T U V W X
A005	.063	32	FG4	2.4	.085	.024	.0016	.282	38%	H I J K L M N P Q R S T U V W X
A009	.059	60	CD10	4.8	.090	.024	.0017	.267	40%	H J K L M N P Q R S T U W X
C047A	.059	160	F7	1.2	.067	.025	.0013	.373	42%	A E F H I J K L M N O P Q R S T U V W X
C116A	.207	180	F13	3.6	.069	.025	.0014	.362	12%	H I O P Q S U W X
C069A	.209	50	E15	1.2	.071	.025	.0014	.352	11%	H J K L M O P R S T U V W
C055A	.054	300	E7	1.2	.076	.025	.0015	.329	46%	F G H I J K L M N O P Q R S T U V W X
C073A	.209	045	EF12	4.8	.080	.025	.0016	.313	11%	I K L M N O P Q R S T U V W

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY FLAW DEPTH

C021B	.059	55	E10	4.8	.092	.025	.0018	.272	42%	B D E F G H I J K L M N O P Q R S T U V W X
A017	.061	130	EF3	3.6	.096	.025	.0019	.260	40%	H I J K M P Q R S U V W X
C039B	.061	173	D14	2.4	.097	.025	.0019	.258	40%	A D E F G H I J K L M N O P Q R S T U V W X
C001A	.052	085	D11	5.9	.242	.025	.0047	.103	48%	A B C E F G H I J K L M O P Q R T U W X
C106A	.209	160	BC6	0.0	.312	.025	.0061	.080	11%	F H I J K L M N O P Q R S T U V W X
C007A	.059	50	BC11	5.9	.060	.026	.0012	.433	44%	A E F G H K L M N O P Q R S T U W
C002A	.058	60	E7	1.2	.060	.026	.0012	.433	44%	F H I J K L M N O P Q R S T U V W X
C045A	.064	145	B6	0.0	.066	.026	.0013	.394	40%	I Q
C017A	.057	60	E6	0.0	.069	.026	.0014	.377	45%	E F G H I K L M N O P Q R S T U V W X
C103B	.208	140	E13	3.6	.073	.026	.0015	.356	12%	H J K L M O P Q R S T U W
C081A	.208	40	B7	1.2	.075	.026	.0015	.347	12%	D H I J K L M O P R S T U V W X
C094A	.210	140	EF9	3.6	.076	.026	.0016	.342	12%	H I J K L M N P S T U V W X
A018	.061	130	FG2	4.8	.081	.026	.0017	.321	42%	I L M N P Q R S T U V W X
C045B	.064	145	CD7	1.2	.102	.026	.0021	.255	40%	A B E F H I J K L M N O P Q R S T U V W X
A012	.056	60	DE11	5.9	.296	.026	.0060	.088	46%	A B C D E G H I J K M N O P Q R S T U W X
C007A	.059	50	C8	2.4	.067	.027	.0014	.403	45%	H K L M N O P Q R S T U V W X
C034A	.059	80	EF11	5.9	.070	.027	.0015	.386	45%	H L M N O P Q R S T U V W X
C110A	.209	145	BC10	4.8	.075	.027	.0016	.360	12%	H I J K L N O P Q R S T U W X
C068A	.209	45	F14	2.4	.084	.027	.0018	.321	12%	H I K L M N O P R S T U V W X
A005	.063	32	EF7	1.2	.094	.027	.0020	.287	42%	F H I J K L M N P Q R S T U V W X
C042B	.069	55	EF13	3.6	.095	.027	.0020	.284	39%	B D E F G H I J K L M N P Q R S U V W X
B024	.211	230	BC3	3.6	.109	.027	.0023	.248	12%	H J K L M N Q R S T U V W X
C117A	.208	220	BC7	1.2	.076	.028	.0017	.359	13%	E F G H I J L M N O P Q R S U V W X
C033B	.059	150	BC12	4.8	.078	.028	.0017	.359	47%	A B C F G H I J K L M O P Q R S T U V W
C084A	.210	45	DE14	2.4	.080	.028	.0018	.350	13%	D G H I K L M N O P Q R S T U V W X
C086A	.206	35	B11	5.9	.097	.028	.0021	.289	13%	H I J K L M N O P R S T U V W X
C006A	.059	55	BC10	4.8	.150	.028	.0033	.187	47%	A B C D H I K O P T U
C026A	.056	290	C8	2.4	.083	.029	.0019	.349	51%	D E F G H I K L M N O P Q R S T U V W
C004B	.060	45	F9	3.6	.083	.029	.0019	.349	48%	A B C E F G H I J K L M N O P Q R S T U V W X
A022	.061	230	FG3	3.6	.085	.029	.0019	.341	47%	H I J K L M N P Q R S T U V W X
A011	.062	60	BC15	1.2	.086	.029	.0020	.337	46%	H J K L M N O P Q R S T U V W X
C028A	.059	50	D7	1.2	.079	.030	.0019	.380	50%	A B E H I J K L M N O P Q R S T U V W X
C034A	.059	80	DE14	2.4	.080	.030	.0019	.375	50%	A B C D E F G H I K L M N O P Q R S T U V W X
C027B	.059	50	C7	1.2	.083	.030	.0020	.361	50%	B D E F G H I J K L M N O P Q R S T U V W X
B004	.211	32	BC14	2.4	.116	.030	.0027	.259	14%	H J K L M N P Q R S T U X
C016A	.059	50	E9	3.6	.248	.030	.0058	.121	50%	A B C D E F G H I J K L M N O P Q R S T U V W X
C048A	.059	160	F12	4.8	.079	.031	.0019	.392	52%	A E F G H I J K L M N O P Q R S T U V W X
C033A	.059	150	F6	0.0	.082	.031	.0020	.378	52%	D F H I J K L M N O P Q R S T U V W X
C040B	.058	290	CD11	5.9	.086	.031	.0021	.360	53%	A B C D E F G H I J K L M N O P Q R S T U V W X
C110A	.209	145	F8	2.4	.098	.031	.0024	.316	14%	E H I J K L M N O P Q R S T U V W X
B024	.211	230	FG3	3.6	.118	.031	.0029	.263	14%	H J K L M P Q R S T U V W X
C016A	.059	50	DE5	1.2	.253	.031	.0062	.123	52%	A B C D E F G H I J K L M N O P Q R S T U V W X
C056A	.207	40	D6	0.0	.290	.031	.0071	.107	14%	B E F G H I J K L M N O P Q R T U V W X
C002A	.058	60	EF9	3.6	.082	.032	.0021	.390	55%	B C E F G H I J K L M N O P Q R S T U V W X
C111A	.209	100	EF15	1.2	.092	.032	.0023	.348	15%	H I J K M N O P Q R S T U V W X
C101A	.210	300	BC9	3.6	.094	.032	.0024	.340	15%	D H I J K L M N O P Q R S T U V W X
C086A	.206	35	CD9	3.6	.095	.032	.0024	.337	15%	H I J K L M N O P R T U V W X
C100A	.208	205	B13	3.6	.097	.032	.0024	.330	15%	F G H I J K L M N O P R S T U V W X
C022B	.057	55	D14	2.4	.241	.032	.0061	.133	56%	A B D E F G H I J K L M N O P Q R S T U V W X
C031A	.060	150	E6	0.0	.249	.032	.0063	.129	53%	A D E F G H I J K L M N O P Q R S T U V W X
A004	.063	30	DE9	3.6	.340	.032	.0085	.094	50%	A B C D H I J K O P T U
C109A	.208	160	BC6	0.0	.076	.033	.0020	.434	15%	H I J K O P T U
C048A	.059	160	BC12	4.8	.085	.033	.0022	.388	55%	A C D E F G H I J K L M N O P Q R S T U V W X
C020A	.059	40	C8	2.4	.085	.033	.0022	.388	55%	A C D E F G H I J K L M N O P Q R S T U V W X
C081A	.208	40	C13	3.6	.088	.033	.0023	.375	15%	D H I J K L M N O P R S T U V W X

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY FLAW DEPTH

C047A	.059	160	E10	4.8	.108	.033	.0028	.306	55%	A E G H I J K L M N O P Q R S T U V W X
B017	.212	130	FG10	4.8	.123	.033	.0032	.268	15%	H I J K L M N O P Q R S T U V W X
C031A	.060	150	B14	2.4	.249	.033	.0065	.133	54%	A B C D E F G H I J K L M N O P Q R S T U V W X
C016A	.059	50	DE13	3.6	.257	.033	.0067	.128	55%	A B C D E F G H I J K L M N O P Q R S T U V W X
C022A	.057	55	C10	4.8	.258	.033	.0067	.128	57%	A B C D E F G H I J K L M N O P Q R S T U V W X
C043A	.057	160	E9	3.6	.260	.033	.0067	.127	57%	A B C D E F G H I J K L M N O P Q R S T U V W X
C046B	.060	150	E10	4.8	.261	.033	.0068	.126	54%	A B C D E F G H I J K L M N O P Q R S T U V W X
C100A	.208	205	D10	4.8	.076	.034	.0020	.447	16%	E F G H I J K L M N O P Q R S T U V W X
A004	.063	30	BC12	4.8	.111	.034	.0030	.306	53%	A C H I J K L M N O P Q R S T U W X
B006	.211	32	BC3	3.6	.124	.034	.0033	.274	16%	K L M O P Q R S T U V W X
C008A	.058	50	C14	2.4	.275	.034	.0073	.124	58%	A B C D E F G H I J K L M N O P Q R S T U V W X
A016	.058	125	DE7	1.2	.288	.034	.0077	.118	58%	A B C D E F G H I J K L M N O P Q R S T U V W X
C092B	.209	160	C7	1.2	.301	.034	.0080	.113	16%	E F G H I J K L M N O P Q R S T U V W X
C058A	.208	40	DE15	1.2	.310	.034	.0083	.110	16%	D F I J K L M N O P Q R S T U V W X
C094A	.210	140	D7	1.2	.098	.035	.0027	.357	16%	C F H I J K L M N P S T U V W X
C081A	.208	40	E11	5.9	.100	.035	.0027	.350	16%	D H I J K L M N O P R S T U V W X
C101A	.210	300	EF11	5.9	.103	.035	.0028	.340	16%	D E F G H I J K L M N O P Q S T U V W X
C101A	.210	300	BC12	4.8	.106	.035	.0029	.330	16%	D G H I J K L M N O P Q R S T U V W X
B005	.213	32	BC4	2.4	.121	.035	.0033	.289	16%	H I J K M P Q R S T U V W X
C043A	.057	160	DE5	1.2	.256	.035	.0070	.137	61%	A B C D E F G H I J K L M N O P Q R S T U V W X
C046A	.060	150	C6	0.0	.257	.035	.0071	.136	58%	A B C D E F G H I J K L M N O P Q R S T U V W X
C043A	.057	160	DE13	3.6	.258	.035	.0071	.136	61%	A B C D E F G H I J K L M N O P Q R S T U V W X
C005A	.061	45	C10	4.8	.258	.035	.0071	.136	57%	A B C D E F G H I J K L M N O P Q R S T U V W X
C008A	.058	50	D6	0.0	.259	.035	.0071	.135	60%	A B C D E F G H I J K L M N O P Q R S T U V W X
C035A	.061	220	D9	3.6	.268	.035	.0074	.131	57%	A B D E F G H I J K L M N O P Q R S T U V W X
C108A	.209	150	B11	5.9	.095	.036	.0027	.379	17%	H I J K L M N O P Q R S T U V W X
C069A	.209	50	B10	4.8	.096	.036	.0027	.375	17%	H I J K L M O P Q R S T U V W X
A011	.062	60	EF13	3.6	.098	.036	.0028	.367	58%	A H I J K L M N O P Q R S T U V W X
C074B	.208	45	CD9	3.6	.103	.036	.0029	.350	17%	D H I J K L M N P Q R S U V W X
A018	.061	130	CD2	4.8	.123	.036	.0035	.293	59%	A D I L M N O P Q R S T U V W X
C005A	.061	45	C6	0.0	.247	.036	.0070	.146	59%	A B C D E F G H I J K L M N O P Q R S T U V W X
C078A	.207	40	C7	1.2	.250	.036	.0071	.144	17%	B E F H I J K L M N O P Q R S T U V W X
C029A	.059	120	D10	4.8	.252	.036	.0071	.143	61%	A B C D E F G H I J K L M N O P Q R S T U V W X
A016	.058	125	EF10	4.8	.290	.036	.0082	.124	62%	A B C D E F G H I J K L M N O P Q R S T U W X
C107A	.210	140	EF7	1.2	.304	.036	.0086	.118	17%	E H I J K L M N O P Q R S T U V W X
A003	.054	32	BC8	2.4	.318	.036	.0090	.113	66%	A B C D E F G H I J K L M N O P Q R S T U V W X
A012	.056	60	CD7	1.2	.340	.036	.0096	.106	64%	A B C D G H I J K M N O P Q R S T U V W X
C054A	.061	300	B15	1.2	.101	.037	.0029	.366	60%	A B C D E F G H I J K L M N O P Q R S T U V W X
C118A	.209	300	B13	3.6	.105	.037	.0030	.352	17%	H I J K L M N O P Q R S T U V W X
B018	.210	130	BC4	2.4	.134	.037	.0039	.276	17%	J K M O P S T U V W X
C046A	.060	150	C14	2.4	.261	.037	.0076	.142	61%	A B C D E F G H I J K L M N O P Q R S T U V W X
C049A	.061	200	DE14	2.4	.262	.037	.0076	.141	60%	A B C D E F G H I J K L M N O P Q R S T U V W X
C049A	.061	200	CD6	0.0	.279	.037	.0081	.133	60%	A B C E F G H I J K L M N O P Q R S T U V W X
C092B	.209	160	D14	2.4	.298	.037	.0087	.124	17%	E F G H I J K L M N O P Q R S T U V W X
C070B	.206	45	D11	5.9	.106	.038	.0032	.358	18%	G H I J K L M N O P Q R S T U V W X
B012	.221	60	BC14	2.4	.124	.038	.0037	.306	17%	H I J K L M N P Q R S U V W X
C001B	.052	085	D6	0.0	.279	.038	.0083	.136	73%	A B E F G H I J K L M N O P Q R S T U V W X
C022B	.057	55	C6	0.0	.287	.038	.0086	.132	66%	A B C D E F G H I J K L M N O P Q R S T U V W X
C001B	.052	085	D18	2.4	.269	.039	.0082	.145	75%	A B C D E F G H I J K L M N O P Q R S T U V W X
C117A	.208	220	BC15	1.2	.119	.040	.0037	.336	19%	E F G H I J K M N O P Q R S T U V W X
C065A	.196	50	BC10	4.8	.119	.040	.0037	.336	20%	G H I J K L M N O P Q R S T U V W X
C064A	.209	60	F10	4.8	.125	.040	.0039	.320	19%	F G H I J K L N O P Q R S T U V W X
A006	.062	32	FG3	3.6	.129	.040	.0041	.310	64%	A C G H I J K M N O P Q R S U V W X
C106A	.209	160	F10	4.8	.306	.040	.0096	.131	19%	A B E F G H I J K L M N P Q R S T U W X

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY FLAW DEPTH

A024	.057	230	CD12	4.8	.334	.C40	.0105	.120	70%	A B C D H I J K M N O P Q R T U V W X
C084A	.210	45	A11	5.9	.105	.C41	.0034	.390	19%	D E H I J K L M N O P Q R S T U V W X
C086A	.206	35	C7	1.2	.108	.C41	.0C35	.380	19%	H I J K L M N O P R S T U V W X
C116A	.207	180	011	5.9	.117	.C41	.0038	.350	19%	H I K L N O P Q R S T U V W X
C008B	.058	50	C10	4.8	.342	.C41	.0110	.120	70%	A B C D E F G H I J K L M N O P Q R S T U V W X
C069A	.209	50	E11	5.9	.115	.C42	.0C38	.365	20%	H I J K L M N O P Q R S T U V W X
C080A	.206	35	D15	1.2	.117	.C42	.0C39	.359	20%	H I J K L M N O P Q R S T U V W X
A011	.062	60	EF6	0.0	.352	.C42	.0116	.119	67%	A B C D E F G H I J K L M N O P Q R S T U V W X
A024	.057	230	DE9	3.6	.352	.042	.0116	.119	73%	A B C D G H I J K M N O P Q R S T U V W X
B017	.212	130	CD14	2.4	.143	.C43	.0048	.301	20%	G J K M P Q R S T U X
B012	.221	60	EF11	5.9	.143	.C43	.0048	.301	19%	H I J K L M P Q R S T U V W X
C005B	.061	45	E14	2.4	.247	.C43	.0083	.174	70%	A B C D E F G H I J K L M N O P Q R S T U V W X
C106A	.209	160	BC14	2.4	.331	.C43	.0112	.130	20%	E F G H I J K L M N O P Q R S T U V W X
C116A	.207	180	B14	2.4	.124	.044	.0043	.355	21%	E H I J K L M N O P Q R T U V W X
C096A	.207	180	BC6	0.0	.313	.C44	.0108	.141	21%	A E F G H I J K L M N O P Q S T U V W X
C095A	.208	190	C10	4.8	.322	.C44	.0111	.137	21%	A B D F H I J K L M N O P Q S T U W X
C057A	.208	35	DE14	2.4	.323	.C44	.0112	.136	21%	E F G H I J K L M N O P Q R S T U V W X
A018	.061	130	CD12	4.8	.326	.044	.0113	.135	72%	A B C D E G I J K L M N O P Q R S T U V W X
C058A	.208	40	EF11	5.9	.331	.C44	.0114	.133	21%	E F G H I J K L M N O P Q R S T U V W X
A014	.064	125	CD14	2.4	.342	.C44	.0118	.129	68%	A B C D E F G H I K L M N P Q R S T U V W X
A011	.062	60	CD9	3.6	.362	.C44	.0125	.122	70%	A B C D E F G H I J K L M N O P Q R S T U V W X
C100A	.208	205	B14	2.4	.131	.C45	.0C46	.344	21%	F G H I J K L M N O P R S U V W X
B010	.224	60	EF4	2.4	.135	.C45	.0C48	.333	20%	H I K M N P Q R S T U V W X
C068A	.209	45	C12	4.8	.122	.046	.0044	.377	22%	H I J K L M N O P R S T U V W X
C080A	.206	35	D12	4.8	.124	.046	.0045	.371	22%	H I J K L M N O P Q R S T U V W X
A010	.060	60	CD8	2.4	.362	.046	.0131	.127	76%	A B C D E H I J K L M N O P Q R S T U V W X
A006	.062	32	CD6	0.0	.37C	.046	.0134	.124	74%	A B C D E F G H I J K M N O P Q R S T U V W X
A023	.059	230	CD10	4.8	.372	.C46	.0134	.124	77%	A B C D H I J K . O P T U
A018	.061	130	CD9	3.6	.372	.C46	.0134	.124	75%	A B C D F G I J K L M N O P Q R S T U V W X
A005	.063	32	CD11	5.9	.384	.C46	.0139	.120	73%	A B C D F G H I J K L M N O P Q R S T U V W X
C092A	.209	160	E10	4.8	.295	.C47	.0109	.159	22%	F G H I J K L M N O P Q R S T U V W X
C108A	.209	150	D8	2.4	.134	.C48	.0050	.358	22%	H I J K L M N O P Q R S T U V W X
B010	.224	60	FG13	3.6	.137	.048	.0052	.350	21%	H I J K L M N P Q R S T U V W X
C058A	.208	40	E7	1.2	.326	.C48	.0123	.147	23%	F H I J K L M N O P Q R S T U V W X
A006	.062	32	DE11	5.9	.370	.C48	.0139	.130	77%	A B C D F G H I J K M N O P Q R S T U V W X
C074B	.208	45	E8	2.4	.129	.C49	.0050	.380	23%	H I J K L M N P Q R S T U W X
C069A	.209	50	E9	3.6	.131	.C49	.0050	.374	23%	H I J K L M N O P R S T U V W X
C070A	.206	45	EF15	1.2	.134	.C49	.0052	.366	23%	F G H I J K L M N O P Q R S T U V W X
C084A	.210	45	EF13	3.6	.136	.C49	.0052	.360	23%	D H I J K L M N O P Q R S T U V W X
C088A	.197	150	EF15	1.2	.31C	.C49	.0119	.158	24%	E F G H I K L M N O P Q R S T U V W X
C118A	.209	300	D8	2.4	.132	.C50	.0052	.379	23%	H I J K L M N O P Q R S T U V W X
C081A	.208	40	F14	2.4	.135	.050	.0053	.370	24%	H I J K L M O P R S T U V W X
C086A	.206	35	DE15	1.2	.138	.05C	.0054	.362	24%	H I J K L M N O P R S T U V W X
B011	.224	60	DE10	4.8	.144	.05C	.0057	.347	22%	E F G H I J K L M N O P Q R S T U V W X
C057A	.208	35	EF10	4.8	.362	.C50	.0142	.138	24%	F H I J K L M N O P Q R S T U V W X
C080A	.206	35	DE7	1.2	.129	.051	.0052	.395	24%	H I J K L M N O P Q R S T U V W X
C075B	.210	55	EF15	1.2	.317	.C51	.0127	.161	24%	H I J K L M O P Q R S T U V W X
C095A	.208	190	BC14	2.4	.328	.C51	.0131	.155	24%	H I J K L M N O P Q R S T U V W X
C101A	.210	300	F8	2.4	.14C	.052	.0057	.371	24%	D F H I J K L M N O P Q R S T U V W X
B003	.223	32	DE9	3.6	.144	.052	.0059	.361	23%	G H J K L . N O P S T U
C059A	.208	035	C14	2.4	.318	.C52	.0130	.164	25%	A B F H I J K L M N O P Q R S T U V W X
C102A	.211	300	E13	3.6	.136	.053	.0057	.390	25%	D E F H I K L M N O P Q R S T U V W X
B016	.225	130	DE9	3.6	.14C	.053	.0058	.379	23%	H I J K M O P Q R S T U V X
B002	.225	32	BC10	4.8	.145	.C53	.0060	.366	23%	H I J K L N O P Q R S T U V W X

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY FLAW DEPTH

C075B	.210	55	C7	1.2	.321	.053	.0134	.165	25%	A B H I J K L M O P Q R S T U V W X
C088A	.197	150	E11	5.9	.329	.053	.0137	.161	26%	F G H I J K L M N O P Q R S T U V W X
C057A	.208	35	E6	0.0	.330	.053	.0137	.161	25%	A D E F G H I J K L M N O P Q R S T U V W X
C085A	.209	45	C15	1.2	.146	.054	.0062	.370	25%	H I J K L M N O P Q R S T U V W X
B015	.225	125	BC10	4.8	.149	.054	.0063	.362	23%	H I J K N O P Q R S T U V W X
C064A	.209	60	B13	3.6	.153	.054	.0065	.353	25%	F G H I J K L M N O P Q R S T U V W X
C059B	.208	035	E10	4.8	.313	.054	.0133	.173	25%	E F G H I J K L M N O P Q R S T U V W X
A022	.061	230	EF7	1.2	.356	.054	.0151	.152	88%	A B C D E F G H I J K L M N O P Q R S T U V W X
B017	.212	130	EF5	1.2	.426	.054	.0181	.127	25%	H I J K L M N O P Q R S T U V W X
B021	.227	230	DE9	3.6	.144	.055	.0062	.382	24%	H I J K L M N O P S T U V W X
B005	.213	32	CD9	3.6	.442	.056	.0194	.127	26%	A B C D E G H I J K M N O P Q R S T U V X
C097A	.210	145	D10	4.8	.126	.057	.0056	.452	27%	F G H I J K L M N O P Q S T U V W X
C102A	.211	300	C8	2.4	.141	.057	.0063	.404	27%	F H I J K L M N O P Q R S T U W X
C074B	.208	45	DE11	5.9	.158	.057	.0071	.361	27%	F H I J K L M N O P Q R S T U V W X
C059A	.208	035	D6	0.0	.345	.C57	.0154	.165	27%	A B C D E F G H I J K L M N O P Q R S T U V W X
C117B	.208	220	F9	3.6	.129	.058	.CC59	.450	27%	E F G H I J K L M N O P Q R T U W X
B023	.227	230	EF14	2.4	.157	.C58	.0071	.369	25%	H I J K M N O P Q R S T U V W X
C056B	.207	40	D10	4.8	.408	.C58	.0186	.142	28%	B E F G H I J K L M N P Q R S T U V W X
C109A	.208	160	BC10	4.8	.151	.C59	.0070	.391	28%	E F G H I J K L M N O P Q R S T U V W X
C056A	.207	40	D14	2.4	.336	.C59	.C156	.176	28%	B F G H I J K L M N O P Q R T U V W X
C096A	.207	180	E10	4.8	.347	.C59	.0161	.170	28%	A E F G H I J K L M N O P Q S T U V W X
C103A	.208	140	D11	5.9	.148	.06C	.0070	.405	28%	E F G H I K L M N O P R S T U V W X
C094A	.210	140	D12	4.8	.153	.06C	.0072	.392	28%	F G H I J K L M N O P R S T U V W X
C095A	.206	190	E6	0.0	.338	.C6C	.0159	.178	28%	A B H I J K M O P Q S T U X
C073B	.209	045	C9	3.6	.06C	.061	.0029	****	29%	D E F G H I J K L M N O P Q R S T U V W X
C114A	.208	250	BC15	1.2	.342	.062	.0166	.181	29%	A B C D E F G H I J K L M N O P Q R S T U V W X
C094A	.210	140	D14	2.4	.162	.063	.0080	.389	30%	F G H I J K L M N O P S T U V W X
C063A	.212	30	C10	4.8	.333	.C63	.0165	.189	29%	D E F G H I J K L M N O P Q R S T U V W X
C063A	.212	30	D14	2.4	.34C	.C63	.0168	.185	29%	A B C E F G H I J K L M N O P Q R S T U V W X
C085B	.209	45	E8	2.4	.153	.C64	.0077	.418	30%	D G H I J K L O P Q R S T U V W X
B023	.227	230	DE10	4.8	.190	.C64	.0095	.337	28%	H I J K M N O P Q R S T U V W X
B009	.223	60	CD8	2.4	.460	.064	.0231	.139	28%	A B C D G H I J K L M N O P Q R S T U V W X
C111A	.209	100	BC14	2.4	.171	.067	.0C90	.392	32%	E F G H I J K L M N O P Q R S T U V W X
C117B	.208	220	E13	3.6	.183	.C68	.0098	.372	32%	E F G H I J K L M N P Q R S T U W X
C077A	.206	45	E8	2.4	.182	.071	.0101	.390	34%	H I J K L M N O P Q R S T U V W X
C110A	.209	145	B14	2.4	.185	.C74	.0107	.400	35%	A E F G H I J K L M N O P Q R S T U W X
C063A	.212	30	DE6	0.0	.381	.076	.0227	.199	35%	A B D F G H I J K L M N O P Q R S T U V W X
C096A	.207	180	B14	2.4	.393	.C77	.0238	.196	37%	A B C D E F G H I J K M N O P Q R S T U V W X
B022	.212	230	CD4	2.4	.444	.080	.0279	.180	37%	A B C D H I J K L M N O P Q R S T U V W X
B009	.223	60	EF10	4.8	.478	.C80	.0300	.167	35%	A B C D E F G H I J K L M N O P Q R S T U V W X
B018	.210	130	BC7	1.2	.458	.C84	.0302	.183	39%	A B C D H I J K L M N O P Q R S T U V W X
B020	.226	230	EF7	1.2	.478	.C86	.0323	.180	38%	A B C D E G H I J K L M N O P Q R S T U V W X
B018	.210	130	CD16	0.0	.498	.C88	.0344	.177	41%	A B D H I J K L M P Q R S T U V W X
B018	.210	130	FG9	3.6	.458	.C90	.0324	.197	42%	A B C D E G H I J K L M N O P Q R S T U V X
B024	.211	230	BC13	3.6	.512	.09C	.0362	.176	42%	A B C D E F G H I J K L M N O P Q R S T U V W X
B005	.213	32	DE13	3.6	.506	.C92	.0365	.182	43%	A B C D H I J K L M N O P Q R S T U V X
B006	.211	32	EF5	1.2	.508	.C92	.0367	.181	43%	A B C D E F H I J K L M N O P Q R S T U V W X
B006	.211	32	FG13	3.6	.524	.092	.0378	.176	43%	A B C D G H I J K L M N O P Q R S T U V X
B024	.211	230	EF10	4.8	.504	.094	.0372	.187	44%	A B C D E H I J K L M N O P Q R S T U V W X
B022	.212	230	BC13	3.6	.506	.094	.0373	.186	44%	A B C D F G H I J K L M N O P Q R S T U V W X
B004	.211	32	DE9	3.6	.510	.094	.0376	.184	44%	A B C D E F H I J K L M N O P Q R S T U V W X
B022	.212	230	FG8	2.4	.466	.C96	.0351	.206	45%	A B C D E F G H I J K L M N O P Q R S T U V W X
C071A	.206	35	D15	1.2	.518	.096	.0390	.185	46%	A B C E F G H I J K L M N O P Q R S T U V W X
C071A	.206	35	B7	1.2	.495	.097	.0377	.196	47%	A B C D E F G H I J K L M N O P Q R S T U V W X

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY FLAW DEPTH

B023	.227	230	BC11	5.9	.470	.098	.0362	.209	43%	A	B	C	D	E			H	I	J	K		M	N	O	P	Q	R	S	T	U	V	W	X
C091B	.205	145	BC11	5.9	.500	.103	.0404	.206	50%	A	B		D	E	F	G	H	I	J	K	L	M	N	O	P	Q		S	T	U	V	W	X
B011	.224	60	EF13	3.6	.512	.104	.0418	.203	46%	A	B	C	D				H	I	J	K		M	N	O	P	Q	R	S	T	U		W	X
C072A	.207	50	E6	0.0	.326	.105	.0269	.322	50%	A				E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C078A	.207	40	D15	1.2	.494	.106	.0411	.215	51%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
B016	.225	130	DE12	4.8	.520	.106	.0433	.204	47%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
B003	.223	32	BC11	5.9	.526	.106	.0438	.202	47%	A	B	C	D		F		H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V		X
B012	.221	60	DE9	3.6	.530	.106	.0441	.200	47%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
B016	.225	130	CD4	2.4	.534	.106	.0444	.199	47%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C066A	.206	50	E7	1.2	.459	.107	.0386	.233	51%	A	B		D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C066B	.206	50	D11	5.9	.489	.107	.0411	.219	51%	A	B		D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C093B	.208	150	D11	5.9	.492	.107	.0413	.217	51%			C	D	E	F	G	H	I	J	K	L	M	N	O	P			S	T	U		W	X
C060B	.209	60	E10	4.8	.475	.108	.0403	.227	51%					E	F	G	H	I	J	K	L	M	N		P	Q	R	S	T	U	V	W	X
C105A	.209	140	D15	1.2	.495	.108	.0420	.218	51%	A	B	C	D		F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
B014	.221	130	DE7	1.2	.522	.108	.0443	.207	48%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
B011	.224	60	CD5	1.2	.530	.108	.0449	.204	48%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
B012	.221	60	CD3	3.6	.534	.108	.0453	.202	48%	A	B	C	D			G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C079A	.211	55	BC12	4.8	.283	.109	.0242	.385	51%					E			H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V		X
C105B	.209	140	D11	5.9	.466	.109	.0399	.234	52%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C107A	.210	140	D11	5.9	.503	.109	.0430	.217	51%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C104B	.210	280	BC11	5.9	.513	.109	.0439	.212	51%				D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C112A	.207	175	D10	4.8	.520	.109	.0445	.210	52%	A			D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C066A	.206	50	C15	1.2	.508	.110	.0439	.217	53%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C060A	.209	60	C14	2.4	.519	.110	.0448	.212	52%	A	B		D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
B023	.227	230	DE5	1.2	.534	.110	.0461	.206	48%	A	B	C	D			G	H	I	J	K		M	N	O	P	Q	R	S	T	U	V	W	X
B010	.224	60	CD8	2.4	.550	.110	.0475	.200	49%	A	B	C	D	E	F	G	H	I	J	K		M	N	O	P	Q	R	S	T	U	V	W	X
C076A	.211	50	B11	5.9	.484	.111	.0422	.229	52%	A	B		D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C113A	.210	280	BC6	0.0	.514	.111	.0448	.216	52%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U		W	X
C112A	.207	175	F6	0.0	.521	.112	.0458	.215	54%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
B021	.227	230	FG6	0.0	.538	.112	.0473	.208	49%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
B017	.212	130	CD8	2.4	.474	.114	.0424	.241	53%	A	B	C	D	E	F	G	H	I	J	K		M	N	O	P	Q	R	S	T	U	V	W	X
C113A	.210	280	BC10	4.8	.499	.114	.0447	.228	54%				D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U		W	X
B008	.226	60	DE7	1.2	.520	.114	.0465	.219	50%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C072B	.207	50	E14	2.4	.523	.114	.0468	.218	55%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C060A	.209	60	C6	0.0	.535	.114	.0479	.213	54%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C062B	.210	40	E11	5.9	.539	.115	.0487	.213	54%	A	B		D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C087A	.209	160	BC6	0.0	.559	.115	.0505	.206	55%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
B011	.224	60	BC11	5.9	.496	.116	.0452	.234	51%	A	B	C	D				H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C093A	.208	150	D7	1.2	.535	.116	.0487	.217	55%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P			S	T	U		W	X
C105A	.209	140	C7	1.2	.543	.116	.0494	.214	55%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C072A	.207	50	E10	4.8	.568	.117	.0522	.206	56%	A	B			E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C113A	.210	280	E14	2.4	.505	.119	.0475	.234	56%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U		W	X
B024	.211	230	DE6	0.0	.472	.124	.0459	.263	58%	A	B	C	D	E	F	G	H	I	J	K		M	N	O	P	Q	R	S	T	U	V	W	X
B012	.221	60	EF6	0.0	.478	.126	.0473	.264	57%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C093A	.208	150	E15	1.2	.610	.126	.0603	.207	60%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P			S	T	U	V	W	X
C087A	.209	160	BC14	2.4	.710	.126	.0702	.177	60%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
B006	.211	32	EF9	3.6	.474	.128	.0476	.270	60%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U			X
B004	.211	32	DE5	1.2	.478	.128	.0480	.268	60%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
B006	.211	32	CD7	1.2	.492	.130	.0502	.264	61%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
B005	.213	32	EF7	1.2	.482	.136	.0515	.282	63%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V		X
B015	.225	125	EF7	1.2	.490	.144	.0554	.294	63%	A	B	C	D	E	F	G	H	I	J	K		M	N	O	P	Q	R	S	T	U	V	W	
C104A	.210	280	D15	1.2	.979	.149	.1145	.152	70%	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
C074B	.208	45	BC7	1.2	.496	.178	.0693	.359	85%	A	B	C	D	E	F		H	I		K	L	M	N	O	P	Q	R	S	T	U	V	W	X

Space Division
Rockwell International

ROCKWELL INTERNATIONAL
SPACE DIVISION
NONDESTRUCTIVE EVALUATION TECHNOLOGY GROUP
DEPARTMENT 044-130 QUALITY ENGINEERING
FLAW SENSITIVITY EVALUATION

SORTED BY A/T

SAMPLE NUMBER	THICK	FINISH	LOCATION	INCLD ANGLE	LENGTH (2C)	DEPTH (A)	AREA	A/2C	A/T	X-RAY A B C D E F G	PENETRANT H I J K L M N	ULTRASONIC O P Q R S	E/C T U V W X
C018A	.061	50	D6	0.0	.007	.C01	.0000	.143	1%				
C077B	.206	45	C13	3.6	.02C	.CC5	.0001	.250	2%				
C068A	.209	45	C7	1.2	.03C	.CC8	.0002	.267	3%		H I J L M	O P R S	
C073B	.209	045	B11	5.9	.035	.CC7	.0002	.200	3%		H I L	P S	
C084A	.210	45	E6	0.0	.028	.CC7	.0002	.250	3%	G	I L M	O P R S	U
C103B	.208	140	BC9	3.6	.017	.CC8	.0C01	.471	3%		H J L M	P Q	
C025A	.061	45	BC14	2.4	.031	.CC2	.0C00	.065	3%		L M	O P Q R S	
C014A	.061	40	DE12	4.8	.017	.0C3	.0000	.176	4%			O	
C100A	.208	205	F6	0.0	.04C	.01C	.0003	.250	4%	E F G	H I L M N	Q S	T V W X
C018A	.061	50	B14	2.4	.025	.CC3	.0C01	.120	4%		I K L	O P R S	
C041A	.060	260	D7	1.2	.01E	.0C3	.0000	.167	5%			O R	
C041A	.060	260	E11	5.9	.015	.CC3	.0000	.200	5%			R	
C042A	.069	55	D11	5.9	.011	.0C4	.0000	.364	5%	D	H K M N	P Q R S	T W
C068A	.209	45	CD15	1.2	.038	.C11	.0003	.289	5%		H I K L M	O P R S	
C077A	.206	45	E9	3.6	.045	.C11	.0004	.244	5%		K L M N	O P Q R S	U V W X
C100A	.208	205	B8	2.4	.041	.C11	.0004	.268	5%		H I		
C044A	.060	140	C6	0.0	.025	.CC3	.0001	.120	5%			O	
C053A	.061	240	E11	5.9	.021	.CC4	.0001	.190	6%	G	H J K M	O P R S	
C021A	.059	55	C7	1.2	.010	.0C4	.0000	.400	6%		H J	O	
C073A	.209	045	F9	3.6	.046	.014	.0005	.304	6%		H I L M N	O P R S	V
C018B	.061	50	BC14	2.4	.021	.0C4	.0C01	.190	6%		K L	P R S	
C019A	.058	60	B8	2.4	.030	.CC4	.0001	.133	6%	A B	H I K L N	P R S	
C116A	.207	180	B6	0.0	.057	.C13	.0006	.228	6%		I J K L N	O P Q	U W X
C116A	.207	180	F6	0.0	.042	.C14	.0005	.333	6%		H I J	O P Q S	U W X
C074B	.208	45	C13	3.6	.054	.C15	.0006	.278	7%		H K L M N	O P R S	T U X
C084A	.210	45	C8	2.4	.C49	.C16	.0006	.327	7%	G	H I K L M	O P R S	U X
C101A	.210	300	CD14	2.4	.055	.C16	.0007	.291	7%	D	H J K L M	O P S	U W X
C054A	.061	300	CD11	5.9	.02C	.CC5	.0001	.250	8%				
C100A	.208	205	EF9	3.6	.055	.017	.0C07	.309	8%		H		T
C109B	.208	160	EF12	4.8	.C66	.C18	.0C09	.273	8%	E	H J K	O P Q R	T U V W X
C052A	.061	180	EF10	4.8	.035	.0C5	.0001	.143	8%		H J K M N	O P Q R S	W X
C052A	.061	160	CD11	5.9	.C45	.CC6	.0002	.122	9%		H I K M N	O P Q R S	W X
C084A	.210	45	A10	4.8	.069	.021	.CC11	.304	9%	E	I K L M N	O P Q R S	U V W X
A003	.054	32	EF11	5.9	.027	.CC5	.0001	.185	9%				
C069A	.209	50	E7	1.2	.066	.020	.0010	.303	9%		H I J K L M N	O P R S	T U V W
C068A	.209	45	F9	3.6	.061	.C19	.0009	.311	9%		H I J L M N	O P R S	T U V W X
C018B	.061	50	CD13	3.6	.035	.CC6	.0002	.171	9%	D F	K L M	P Q R S	W
C045A	.064	145	DE14	2.4	.041	.0C6	.0002	.146	9%	E G	H I K L M N	O P Q R	W
C070A	.206	45	BC7	1.2	.087	.022	.0C15	.253	10%	E	H I J K L M N	O P R S	T U V W X
C116A	.207	180	B9	3.6	.072	.022	.0012	.306	10%		H I J K L N	O P Q R	T U W X

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY A/T

C069A	.209	50	E13	3.6	.064	.021	.0011	.328	10%
C101A	.210	300	C6	0.0	.064	.C23	.0012	.359	10%
C045A	.064	145	CD12	4.8	.045	.CC7	.0002	.156	10%
C109A	.208	160	BC14	2.4	.C63	.C24	.0012	.381	11%
C073A	.209	045	E14	2.4	.071	.023	.0013	.324	11%
C052A	.061	180	EF12	4.8	.041	.CC7	.0002	.171	11%
C073A	.209	045	EF12	4.8	.08C	.C25	.0016	.313	11%
A004	.063	30	EF6	0.0	.C22	.CC7	.0001	.318	11%
C106A	.209	160	BC6	0.0	.312	.025	.0C61	.080	11%
C068A	.209	45	B10	4.8	.064	.C23	.0012	.359	11%
C011A	.062	40	D6	0.0	.044	.CC7	.0002	.159	11%
C108A	.209	150	D15	1.2	.073	.C24	.0014	.329	11%
C108A	.209	150	F11	5.9	.07C	.C23	.0013	.329	11%
C069A	.209	50	E15	1.2	.071	.C25	.0014	.352	11%
C103B	.208	140	E13	3.6	.073	.C26	.0015	.356	12%
C068A	.209	45	F14	2.4	.084	.C27	.0018	.321	12%
C081A	.208	40	B7	1.2	.075	.C26	.0015	.347	12%
C116A	.207	180	F13	3.6	.C69	.C25	.0014	.362	12%
C110A	.209	145	BC10	4.8	.075	.C27	.0C16	.360	12%
C094A	.210	140	EF9	3.6	.076	.026	.0016	.342	12%
A016	.058	125	BC3	3.6	.C34	.CC7	.0CC2	.206	12%
B024	.211	230	BC3	3.6	.109	.C27	.0C23	.248	12%
A023	.059	230	FG3	3.6	.048	.CC8	.0003	.167	13%
C028A	.059	50	D15	1.2	.C32	.CC8	.0C02	.250	13%
C084A	.210	45	DF14	2.4	.080	.C28	.0C18	.350	13%
C030A	.060	160	C6	0.0	.045	.CC8	.0003	.178	13%
C086A	.206	35	B11	5.9	.097	.C28	.0C21	.289	13%
C117A	.208	220	BC7	1.2	.C78	.C28	.0C17	.359	13%
C110A	.209	145	F8	2.4	.098	.C31	.0024	.316	14%
B024	.211	230	FG3	3.6	.118	.C31	.0C29	.263	14%
C056A	.207	40	D6	0.0	.290	.C31	.0071	.107	14%
C042B	.069	55	BC8	2.4	.055	.C1C	.0004	.182	14%
B004	.211	32	BC14	2.4	.116	.03C	.CC27	.259	14%
C020A	.059	40	E7	1.2	.C32	.CC9	.0002	.281	15%
C111A	.209	100	EF15	1.2	.092	.C32	.0023	.348	15%
C045B	.064	145	D9	3.6	.061	.C1C	.0005	.164	15%
C101A	.210	300	BC9	3.6	.094	.C32	.0024	.340	15%
C109A	.208	160	BC6	0.0	.076	.033	.CC20	.434	15%
C100A	.208	205	B13	3.6	.097	.C32	.0C24	.330	15%
C081A	.208	40	C13	3.6	.088	.C33	.0C23	.375	15%
C086A	.206	35	CD9	3.6	.095	.C32	.0024	.337	15%
B017	.212	130	FG10	4.8	.123	.C33	.0032	.268	15%
C081A	.208	40	E11	5.9	.10C	.035	.0C27	.350	16%
C100A	.208	205	D10	4.8	.076	.C34	.0C20	.447	16%
B005	.213	32	BC4	2.4	.121	.C35	.0C33	.289	16%
C094A	.210	140	D7	1.2	.098	.C35	.0C27	.357	16%
C101A	.210	300	BC12	4.8	.106	.C35	.0C29	.330	16%
C025A	.061	45	B10	4.8	.03C	.C1C	.0002	.333	16%
C101A	.210	300	EF11	5.9	.103	.C35	.0028	.340	16%
C092B	.209	160	C7	1.2	.301	.034	.0080	.113	16%
C058A	.208	40	DE15	1.2	.310	.034	.0083	.110	16%
B006	.211	32	BC3	3.6	.124	.C34	.0033	.274	16%
C078A	.207	40	C7	1.2	.250	.C36	.0071	.144	17%
C017A	.057	60	B15	1.2	.04C	.C10	.0003	.250	17%

H J K L M N O P R S T U V W X
D H I J K L M N O P Q R U X
G H K L M N O P Q R S W
H I J K L M N O P Q R S U V X
H I K L M N O P Q R S T U V W
H I J K M N O P Q R S W X
I K L M N O P Q R S T U V W
E F G L M N Q R S V W X
F H I J K L M N O P Q R S T U V W X
H I J K L M N O P R S T U W X
H I K L M N O P Q R S U W
H I J K L M N O P Q R S T U V W X
H O P S T U
H J K L M O P R S T U V W
H J K L M O P Q R S T U W
H I K L M N O P R S T U V W X
D H I J K L M O P R S T U V W X
H I O P Q S U W X
H I J K L N O P Q R S T U W X
H I J K L M N P S T U V W X

H J K L M N Q R S T U V W X
D I J K L M O P T
D G H I K L M N O P Q R S T U V W X
H I J K L M N O P Q R S V W
H I J K L M N O P R S T U V W X
E F G H I J L M N O P Q R S U V W X
E H I J K L M N O P Q R S T U V W X
H J K L M P Q R S T U V W X
B E F G H I J K L M N O P Q R T U V W X
B H I J K L M N O P Q R S V W X
H J K L M N P Q R S T U X
H I K L M O P Q R S U
H I J K M N O P Q R S T U V W X
E F H I K M N O P Q R S U W
D H I J K L M N O P Q R S T U V W X
H I J K O P T U
F G H I J K L M N O P R S T U V W X
D H I J K L M N O P R S T U V W X
H I J K L M N O P R T U V W X
H I J K L M N O P Q R S T U V W X
D H I J K L M N O P R S T U V W X
E F G H I J K L M N O P Q R S T U V W X
H I J K M P Q R S T U V W X
C F H I J K L M N P S T U V W X
D G H I J K L M N O P Q R S T U V W X
H L M O P Q R S
D E F G H I J K L M N O P Q S T U V W X
E F G H I J K L M N O P Q R S T U V W X
D F I J K L M N O P Q R S T U V W X
K L M O P Q R S T U V W X
B E F H I J K L M N O P Q R S T U V W X
H K L M N O P R V W X

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FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY A/T

C074B	.208	45	CD9	3.6	.103	.036	.0029	.350	17%	D H I J K L M N P Q R S U V W X
C107A	.210	140	EF7	1.2	.304	.C36	.0086	.118	17%	E H I J K L M N O P Q R S T U V W X
C118A	.209	300	B13	3.6	.105	.C37	.0030	.352	17%	H I J K L M N O P Q R S T U V W X
C069A	.209	50	B10	4.8	.096	.036	.0027	.375	17%	H I J K L M O P Q R S T U V W X
C108A	.209	150	B11	5.9	.095	.C36	.0027	.379	17%	H I J K L M N O P Q R S T U V W X
B012	.221	60	BC14	2.4	.124	.038	.0037	.306	17%	H I J K L M N P Q R S U V W X
C092B	.209	160	D14	2.4	.298	.C37	.0087	.124	17%	E F G H I J K L M N O P Q R S T U V W X
C011A	.062	40	D12	4.8	.062	.C11	.0005	.177	17%	E H I K L M N O P Q R S U V W X
B018	.210	130	BC4	2.4	.134	.037	.0039	.276	17%	J K M O P S T U V W X
C044B	.060	140	CD8	2.4	.052	.C11	.0004	.212	18%	D E F H J K L M N O P Q R S V W
C039B	.061	173	F12	4.8	.065	.C11	.0006	.169	18%	H I J K M N O P Q R S T U V W X
C003B	.059	45	D10	4.8	.058	.C11	.0CC5	.190	18%	G H I J K L M N O P Q R S U W
C030A	.060	160	C12	4.8	.061	.C11	.0CC5	.180	18%	G H I J K L M N O P Q R S T U V W X
C044B	.060	140	BC12	4.8	.C58	.C11	.0005	.190	18%	H L M N O Q R S T W
C070B	.206	45	D11	5.9	.106	.038	.0C32	.358	18%	G H I J K L M N O P Q R S T U V W X
C030A	.060	160	BC13	3.6	.077	.C11	.0007	.143	18%	G H I J K L M N O P Q R S T U V W X
C003A	.059	45	EF12	4.8	.079	.C11	.0007	.139	18%	A B E G H J K L M N P Q R S T U V W X
B012	.221	60	EF11	5.9	.143	.C43	.0048	.301	19%	H I J K L M P Q R S T U V W X
C117A	.208	220	BC15	1.2	.119	.040	.0037	.336	19%	E F G H I J K M N O P Q R S T U V W X
C106A	.209	160	F10	4.8	.306	.04C	.0096	.131	19%	A B E F G H I J K L M N P Q R S T U W X
C084A	.210	45	A11	5.9	.105	.C41	.0034	.390	19%	D E H I J K L M N O P Q R S T U V W X
C064A	.209	60	F10	4.8	.125	.04C	.0039	.320	19%	F G H I J K L N O P Q R S T U V W X
C086A	.206	35	C7	1.2	.108	.C41	.0035	.380	19%	H I J K L M N O P R S T U V W X
C015B	.061	045	BC13	3.6	.C51	.C12	.0005	.235	19%	A F G H I J K N P Q R S T U W X
C014A	.061	40	CD15	1.2	.068	.C12	.0006	.176	19%	A D H I J K L M N O P Q R S T U V W
L116A	.207	180	D11	5.9	.117	.C41	.0038	.350	19%	H I K L N O P Q R S T U V W X
C065A	.196	50	BC10	4.8	.119	.040	.0037	.336	20%	G H I J K L M N O P Q R S T U V W X
C055A	.054	300	B15	1.2	.041	.011	.0004	.268	20%	H I J K M O P Q R U W
C011A	.062	40	D9	3.6	.065	.C13	.0007	.200	20%	H I J K L M N O P Q R S T U V W X
B010	.224	60	EF4	2.4	.135	.C45	.0048	.333	20%	H I K M N P Q R S T U V W X
C069A	.209	50	E11	5.9	.115	.C42	.0C38	.365	20%	H I J K L M N O P Q R S T U V W X
C106A	.209	160	BC14	2.4	.331	.043	.0112	.130	20%	E F G H I J K L M N O P Q R S T U V W X
C080A	.206	35	D15	1.2	.117	.C42	.0039	.359	20%	H I J K L M N O P Q R S T U V W X
B017	.212	130	CD14	2.4	.143	.043	.0048	.301	20%	G J K M P Q R S T U X
C058A	.208	40	EF11	5.9	.331	.C44	.0114	.133	21%	E F G H I J K L M N O P Q R S T U V W X
C095A	.208	190	C10	4.8	.322	.C44	.0111	.137	21%	A B D F H I J K L M N O P Q S T U W X
C116A	.207	180	B14	2.4	.124	.044	.C043	.355	21%	E H I J K L M N O P Q R T U V W X
C100A	.208	205	B14	2.4	.131	.C45	.0046	.344	21%	F G H I J K L M N O P R S U V W X
C039B	.061	173	B8	2.4	.067	.C13	.0007	.194	21%	A B E F G H I J K L M N O P Q R S T U W
A017	.061	130	DE11	5.9	.064	.013	.0007	.203	21%	M Q R S U W X
B010	.224	60	FG13	3.6	.137	.C48	.0052	.350	21%	H I J K L M N P Q R S T U V W X
C039B	.061	173	E9	3.6	.068	.C13	.0007	.191	21%	A E F G H I J K M N O P Q R S T U V W X
C057A	.208	35	DE14	2.4	.323	.044	.0112	.136	21%	E F G H I J K L M N O P Q R S T U V W X
C039B	.061	173	C11	5.9	.063	.C13	.0006	.206	21%	B D E F G H I J K L M N O P Q R S T U V W X
C015B	.061	045	EF9	3.6	.062	.C13	.0006	.210	21%	F H I J K N P Q R S T U V W X
C096A	.207	180	BC6	0.0	.313	.044	.0108	.141	21%	A E F G H I J K L M N O P Q S T U V W X
C080A	.206	35	D12	4.8	.124	.046	.0045	.371	22%	H I J K L M N O P Q R S T U V W X
C015A	.061	045	D11	5.9	.056	.014	.0006	.250	22%	A D E F G H I J K N O P Q R T U W X
C012A	.062	35	F6	0.0	.077	.014	.0008	.182	22%	A D H I K L M N O P Q R S T U V W X
C108A	.209	150	D8	2.4	.134	.048	.0050	.358	22%	H I J K L M N O P Q R S T U V W X
C092A	.209	160	E10	4.8	.295	.C47	.0109	.159	22%	F G H I J K L M N O P Q R S T U V W X
A018	.061	130	FG7	1.2	.055	.C14	.0006	.255	22%	I L M N Q R S U V W X
B011	.224	60	DE10	4.8	.144	.05C	.0057	.347	22%	E F G H I J K L M N O P Q R S T U V W X
C027A	.059	50	B15	1.2	.048	.013	.0005	.271	22%	E F H I J K L M N O P Q R S U V W
C068A	.209	45	C12	4.8	.122	.046	.0044	.377	22%	H I J K L M N O P R S T U V W X
B003	.223	32	DE9	3.6	.144	.C52	.0059	.361	23%	G H J K L N O P S T U

FLAW SENSITIVITY EVALUATION (CONT)

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C084A	.210	45	EF13	3.6	.136	.C49	.0052	.360	23%	D H I J K L M N O P Q R S T U V W X
A021	.051	230	EF8	2.4	.197	.C12	.C019	.061	23%	A D E F G H K L M N P Q R S T U V W X
C047B	.059	160	C8	2.4	.036	.014	.0004	.389	23%	F H I J K L M N P Q R S U W
C069A	.209	50	E9	3.6	.131	.C49	.0050	.374	23%	H I J K L M N O P R S T U V W X
B002	.225	32	BC10	4.8	.145	.C53	.0060	.366	23%	H I J K L N O P Q R S T U V W X
C070A	.206	45	EF15	1.2	.134	.C49	.0052	.366	23%	F G H I J K L M N O P Q R S T U V W X
C058A	.208	40	E7	1.2	.326	.C48	.0123	.147	23%	F H I J K L M N O P Q R S T U V W X
C013A	.059	35	E9	3.6	.077	.C14	.0008	.182	23%	B E F G H I J K L M O P Q R S T U V W X
B015	.225	125	BC10	4.8	.149	.C54	.0063	.362	23%	H I J K N O P Q R S T U V W X
C074B	.208	45	E8	2.4	.129	.C49	.0050	.380	23%	H I J K L M N P Q R S T U W X
C045B	.064	145	EF14	2.4	.067	.C15	.0C08	.224	23%	G H I K L M N P Q R S U W X
C118A	.209	300	D8	2.4	.132	.050	.0052	.379	23%	H I J K L M N O P Q R S T U V W X
A012	.056	60	DF6	0.0	.062	.C13	.0006	.210	23%	L M P T U W X
B016	.225	130	DE9	3.6	.14C	.C53	.0058	.379	23%	H I J K M O P Q R S T U V X
C002A	.058	60	EF11	5.9	.067	.C14	.0007	.209	24%	F G H I J K L M N O P R S U W X
C088A	.197	150	EF15	1.2	.310	.C49	.0119	.158	24%	E F G H I K L M N O P Q R S T U V W X
C095A	.208	190	BC14	2.4	.328	.C51	.0131	.155	24%	H I J K L M N O P Q R S T U V W X
C075B	.210	55	EF15	1.2	.317	.C51	.0127	.161	24%	H I J K L M O P Q R S T U V W X
C081A	.208	40	F14	2.4	.135	.C50	.0C53	.370	24%	H I J K L M O P R S T U V W X
C086A	.206	35	DE15	1.2	.138	.C50	.0054	.362	24%	H I J K L M N O P R S T U V W X
A024	.057	230	BC7	1.2	.064	.C14	.0007	.219	24%	K M N P Q R S T U
C101A	.210	300	F8	2.4	.14C	.052	.0057	.371	24%	D F H I J K L M N O P Q R S T U V W X
C080A	.206	35	DE7	1.2	.129	.051	.0052	.395	24%	H I J K L M N O P Q R S T U V W X
B021	.227	230	DE9	3.6	.144	.055	.0062	.382	24%	H I J K L M N O P S T U V W X
C053A	.061	240	B8	2.4	.069	.C15	.C006	.217	24%	D E F G H I J K L M N O P Q R S U W X
C014A	.061	40	F7	1.2	.077	.C15	.0C09	.195	24%	H I J K L M N O P Q R S U V W
C057A	.208	35	EF10	4.8	.362	.C5C	.0142	.138	24%	F H I J K L M N O P Q R S T U V W X
C102A	.211	300	E13	3.6	.136	.C53	.0C57	.390	25%	D E F H I K L M N O P Q R S T U V W X
C059A	.208	035	C14	2.4	.318	.C52	.0130	.164	25%	A B F H I J K L M N O P Q R S T U V W X
C075B	.210	55	C7	1.2	.321	.053	.0134	.165	25%	A B H I J K L M O P Q R S T U V W X
C057A	.208	35	E6	0.0	.330	.C53	.0137	.161	25%	A D E F G H I J K L M N O P Q R S T U V W X
C019B	.058	60	F15	1.2	.083	.C15	.0010	.181	25%	A D E F G H I K L M N O P Q R S T U V W X
C020A	.059	40	BC11	5.9	.047	.C15	.0006	.319	25%	A B C E F G H I J K L M N O P Q R S U V W
C019B	.058	60	E10	4.8	.079	.015	.0C09	.190	25%	A B C D E F G H I K L M N O P Q R S T U V W X
C059B	.208	035	E10	4.8	.313	.C54	.0133	.173	25%	E F G H I J K L M N O P Q R S T U V W X
C003B	.059	45	D14	2.4	.074	.015	.0009	.203	25%	E H I J K L M N O P Q R S T U W X
A015	.059	125	EF5	1.2	.C59	.C15	.0C07	.254	25%	L M Q R S T U V
B017	.212	130	EF5	1.2	.426	.054	.0181	.127	25%	H I J K L M N O P Q R S T U V W X
B023	.227	230	EF14	2.4	.157	.C58	.0C71	.369	25%	H I J K M N O P Q R S T U V W X
C085A	.209	45	C15	1.2	.146	.054	.0062	.370	25%	H I J K L M N O P Q R S T U V W X
C064A	.209	60	B13	3.6	.153	.C54	.C065	.353	25%	F G H I J K L M N O P Q R S T U V W X
C018A	.061	50	C11	5.9	.072	.C16	.0C09	.222	26%	E F G H I J K L M O P Q R S T U V W
C088A	.197	150	E11	5.9	.329	.C53	.0137	.161	26%	F G H I J K L M N O P Q R S T U V W X
A012	.056	60	EF9	3.6	.069	.C15	.0C08	.217	26%	G M P Q S T U V W X
B005	.213	32	CD9	3.6	.442	.056	.0194	.127	26%	A B C D E G H I J K M N O P Q R S T U V X
C036A	.061	140	BC12	4.8	.073	.C17	.0C10	.233	27%	A D E F G H I J K L M N O P Q R S T U V W X
C059A	.208	035	D6	0.0	.345	.C57	.0154	.165	27%	A B C D E F G H I J K L M N O P Q R S T U V W X
C117B	.208	220	F9	3.6	.129	.C58	.0C59	.450	27%	E F G H I J K L M N O P Q R T U W X
C097A	.210	145	D10	4.8	.126	.C57	.0056	.452	27%	F G H I J K L M N O P Q S T U V W X
C102A	.211	300	C8	2.4	.141	.057	.0063	.404	27%	F H I J K L M N O P Q R S T U W X
C074B	.208	45	DE11	5.9	.158	.C57	.0C71	.361	27%	F H I J K L M N O P Q R S T U V W X
A017	.061	130	EF7	1.2	.065	.C17	.0C09	.262	27%	M Q R S U V W X
C052A	.061	180	BC14	2.4	.09C	.C17	.0C12	.189	27%	A B D E F G H I J K L M N O P Q R S T U V W X
C019B	.058	60	E12	4.8	.07C	.016	.0C09	.229	27%	E F G H I K L M N O P Q R S T U V W
A002	.059	30	CD13	3.6	.068	.C16	.0009	.235	27%	H I K L M P Q R S U V X

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY A/T

C047A	.059	160	DE15	1.2	.047	.017	.0006	.362	28%	E H I L M N O P Q R S U V W
B009	.223	60	CD8	2.4	.460	.064	.0231	.139	28%	A B C D G H I J K L M N O P Q R S T U V W X
C095A	.208	190	E6	0.0	.338	.060	.0159	.178	28%	A B H I J K M O P Q S T U X
C033A	.059	150	DE14	2.4	.049	.017	.0007	.347	28%	H M N O Q R U V W
C044A	.060	140	B14	2.4	.033	.017	.0004	.515	28%	H K M N O P Q R U
C103A	.208	140	D11	5.9	.148	.060	.0070	.405	28%	E F G H I K L M N O P R S T U V W X
C096A	.207	180	E10	4.8	.347	.059	.0161	.170	28%	A E F G H I J K L M N O P Q S T U V W X
C094A	.210	140	D12	4.8	.153	.060	.0072	.392	28%	F G H I J K L M N O P R S T U V W X
C056B	.207	40	D10	4.8	.408	.058	.0186	.142	28%	B E F G H I J K L M N P Q R S T U V W X
C044A	.060	140	BC10	4.8	.026	.017	.0003	.654	28%	E F G J L M N P Q R S T V W X
C109A	.208	160	BC10	4.8	.151	.059	.0070	.391	28%	E F G H I J K L M N O P Q R S T U V W X
B023	.227	230	DE10	4.8	.190	.064	.0095	.337	28%	H I J K M N O P Q R S T U V W X
C056A	.207	40	D14	2.4	.336	.059	.0156	.176	28%	B F G H I J K L M N O P Q R T U V W X
C063A	.212	30	D14	2.4	.340	.063	.0168	.185	29%	A B C E F G H I J K L M N O P Q R S T U V W X
C063A	.212	30	C10	4.8	.333	.063	.0165	.189	29%	D E F G H I J K L M N O P Q R S T U V W X
C019A	.058	60	C13	3.6	.086	.017	.0011	.198	29%	A B C D E F G H I K L M N P Q R S T V W X
C073B	.209	045	C9	3.6	.060	.061	.0029	****	29%	D E F G H I J K L M N O P Q R S T U V W X
C025A	.061	45	D8	2.4	.079	.018	.0011	.228	29%	A B D F G H I K L M N O P Q R S U V W X
C114A	.208	250	BC15	1.2	.342	.062	.0166	.181	29%	A B C D E F G H I J K L M N O P Q R S T U V W X
C007A	.059	50	EF7	1.2	.087	.018	.0012	.207	30%	C F G H K L M N O P Q R S T U V W X
A023	.059	230	CD5	1.2	.069	.018	.0010	.261	30%	H J K L M N U V W X
A006	.062	32	DE8	2.4	.081	.019	.0012	.235	30%	M P Q R S U V X
C094A	.210	140	D14	2.4	.162	.063	.0080	.389	30%	F G H I J K L M N O P S T U V W X
C048A	.059	160	B10	4.8	.045	.018	.0006	.400	30%	A D G H I J K L M N O P Q R S U V W
C085B	.209	45	E8	2.4	.153	.064	.0077	.418	30%	D G H I J K L O P Q R S T U V W X
A020	.060	230	CD14	2.4	.085	.019	.0013	.224	31%	F H I L M N P Q R S T U V W X
C052A	.061	180	B9	3.6	.086	.020	.0014	.233	32%	A B E F G H I J K L M N O P Q R S T U V W X
C019B	.058	60	F7	1.2	.086	.019	.0013	.221	32%	D E F G H I K L M N O P Q R S T U W X
C117B	.208	220	E13	3.6	.183	.068	.0098	.372	32%	E F G H I J K L M N P Q R S T U W X
C111A	.209	100	BC14	2.4	.171	.067	.0090	.392	32%	E F G H I J K L M N O P Q R S T U V W X
C006A	.059	55	E9	3.6	.084	.020	.0013	.238	33%	H I K P T U
C028B	.059	50	BC11	5.9	.059	.020	.0009	.339	33%	G H I J K P Q R T V W
C034A	.059	80	BC8	2.4	.058	.020	.0009	.345	33%	A D F H I K L M N O P Q R S T U W
C003A	.059	45	EF9	3.6	.082	.020	.0013	.244	33%	E F G H I J K L M N P Q R S T U V W X
A005	.063	32	BC2	4.8	.075	.021	.0012	.280	33%	H J L M N Q R S T U V X
C048A	.059	160	EF9	3.6	.026	.020	.0004	.769	33%	A E G H I J K L M N O P Q R S U V W X
C050B	.063	140	E8	2.4	.096	.021	.0016	.219	33%	A B F G H I J K L M N O P Q R S T U V W X
A023	.059	230	DE15	1.2	.089	.020	.0014	.225	33%	H I J K L M N P T U V W X
A022	.061	230	BC13	3.6	.069	.021	.0011	.304	34%	I J K P Q R S T U
C025A	.061	45	FG12	4.8	.015	.021	.0002	****	34%	
C018A	.061	50	B13	3.6	.091	.021	.0015	.231	34%	A D E F G H I J K L M N O P Q R S T U V W X
C077A	.206	45	E8	2.4	.182	.071	.0101	.390	34%	H I J K L M N O P Q R S T U V W X
C054B	.061	300	E17	1.2	.063	.021	.0010	.333	34%	A B C D H I J K L M N O P Q R S T U V W X
B009	.223	60	EF10	4.8	.478	.080	.0300	.167	35%	A B C D E F G H I J K L M N O P Q R S T U V W X
C033A	.059	150	EF10	4.8	.060	.021	.0010	.350	35%	E H I J K L M N O P Q R S T U W X
C047B	.059	160	B11	5.9	.062	.021	.0010	.339	35%	E H I J K L M N P Q R S U V W
A010	.060	60	BC15	1.2	.078	.021	.0013	.269	35%	A B D H I J K L M N P Q R S T U W X
C063A	.212	30	DE6	0.0	.381	.076	.0227	.199	35%	A B D F G H I J K L M N O P Q R S T U V W X
C110A	.209	145	B14	2.4	.185	.074	.0107	.400	35%	A E F G H I J K L M N O P Q R S T U W X
C041A	.060	260	CD15	1.2	.080	.021	.0013	.263	35%	F G H I J K L M N O P R S T U V W X
A024	.057	230	FG7	1.2	.104	.021	.0017	.202	36%	A H K M N P Q R S T U V W X
A017	.061	130	BC15	1.2	.089	.022	.0015	.247	36%	H I J K M P Q R S U V W X
C039B	.061	173	D6	0.0	.091	.022	.0016	.242	36%	A D E F G H I J K L M N O P Q R S T U W X
A024	.057	230	BC2	4.8	.084	.021	.0014	.250	36%	N P Q R S T U V

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY A/T

C096A	.207	180	B14	2.4	.393	.077	.0238	.196	37%	A B C D E F G	H I J K M N	O P Q R S	T U V W X
B022	.212	230	CD4	2.4	.444	.080	.0279	.180	37%	A B C D	H I J K L M N	O P Q R S	T U V W X
A008	.059	60	EF8	2.4	.080	.022	.0014	.275	37%		H I J K L M N	P Q R S	T U V W X
A009	.059	60	EF5	1.2	.073	.022	.0013	.301	37%		H J K L M	P Q R S	T U V W X
A005	.063	32	FG4	2.4	.085	.024	.0016	.282	38%		H I J K L M N	P Q R S	T U V W X
B020	.226	230	EF7	1.2	.478	.086	.0323	.180	38%	A B C D E G	H I J K L M N	O P Q R S	T U V W X
A010	.060	60	EF3	3.6	.075	.023	.0014	.307	38%		H I J K L M N	P Q R S	T U V W X
A006	.062	32	EF13	3.6	.067	.024	.0013	.358	38%	E	J K M N	P Q R S	U V W X
C042B	.069	55	EF13	3.6	.095	.027	.0020	.284	39%	B D E F G	H I J K L M N	P Q R S	U V W X
B018	.210	130	BC7	1.2	.456	.084	.0302	.183	39%	A B C D	H I J K L M N	O P Q R S	T U V W X
C033B	.059	150	CD8	2.4	.062	.024	.0012	.387	40%	A E F G	H I J K L M	O P Q R S	T U V W
C055B	.054	300	B8	2.4	.069	.022	.0012	.319	40%	D E F G	H I J K L M N	P Q R S	T U V W X
C045B	.064	145	CD7	1.2	.102	.026	.0021	.255	40%	A B E F	H I J K L M N	O P Q R S	T U V W X
C045A	.064	145	B6	0.0	.066	.026	.0013	.394	40%		I	Q	
A017	.061	130	EF3	3.6	.096	.025	.0019	.260	40%		H I J K M	P Q R S	U V W X
C034A	.059	80	BC16	0.0	.062	.024	.0012	.387	40%	A B E F G	H I K L M N	O P Q R S	T U V W
C039B	.061	173	D14	2.4	.097	.025	.0019	.258	40%	A D E F G	H I J K L M N	O P Q R S	T U V W X
A009	.059	60	CD10	4.8	.090	.024	.0017	.267	40%		H J K L M N	P Q R S	T U W X
B018	.210	130	CD16	0.0	.498	.088	.0344	.177	41%	A B D	H I J K L M	P Q R S	T U V W X
A018	.061	130	FG2	4.8	.081	.026	.0017	.321	42%		I L M N	P Q R S	T U V W X
C047A	.059	160	F7	1.2	.067	.025	.0013	.373	42%	A E F	H I J K L M N	O P Q R S	T U V W X
B018	.210	130	FG9	3.6	.458	.090	.0324	.197	42%	A B C D E G	H I J K L M N	O P Q R S	T U V X
C009A	.057	50	CD6	0.0	.066	.024	.0012	.364	42%	E G	H I J K L M N	O P Q R S	T U V W X
B024	.211	230	BC13	3.6	.512	.090	.0362	.176	42%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
A005	.063	32	EF7	1.2	.094	.027	.0020	.287	42%	F	H I J K L M N	P Q R S	T U V W X
C021B	.059	55	E10	4.8	.092	.025	.0018	.272	42%	B D E F G	H I J K L M N	O P Q R S	T U V W X
B006	.211	32	FG13	3.6	.524	.092	.0378	.176	43%	A B C D G	H I J K L M N	O P Q R S	T U V X
B023	.227	230	BC11	5.9	.470	.098	.0362	.209	43%	A B C D E	H I J K M N	O P Q R S	T U V W X
B006	.211	32	EF5	1.2	.508	.092	.0367	.181	43%	A B C D E F	H I J K L M N	O P Q R S	T U V W X
B005	.213	32	DE13	3.6	.506	.092	.0365	.182	43%	A B C D	H I J K L M N	O P Q R S	T U V X
B004	.211	32	DE9	3.6	.510	.094	.0376	.184	44%	A B C D E F	H I J K L M N	O P Q R S	T U V W X
C007A	.059	50	BC11	5.9	.060	.026	.0012	.433	44%	A E F G	H K L M N	O P Q R S	T U W
B022	.212	230	BC13	3.6	.506	.094	.0373	.186	44%	A B C D F G	H I J K L M N	O P Q R S	T U V W X
C002A	.058	60	E7	1.2	.060	.026	.0012	.433	44%	F	H I J K L M N	O P Q R S	T U V W X
B024	.211	230	EF10	4.8	.504	.094	.0372	.187	44%	A B C D E	H I J K L M N	O P Q R S	T U V W X
C017A	.057	60	E6	0.0	.069	.026	.0014	.377	45%	E F G	H I K L M N	O P Q R S	T U V W X
C034A	.059	80	EF11	5.9	.070	.027	.0015	.386	45%		H L M N	O P Q R S	T U V W X
C007A	.059	50	C8	2.4	.067	.027	.0014	.403	45%		H K L M N	O P Q R S	T U V W X
B022	.212	230	FG8	2.4	.466	.096	.0351	.206	45%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C055A	.054	300	E7	1.2	.076	.025	.0015	.329	46%	F G	H I J K L M N	O P Q R S	T U V W X
A011	.062	60	BC15	1.2	.086	.029	.0020	.337	46%		H J K L M N	O P Q R S	T U V W X
B011	.224	60	EF13	3.6	.512	.104	.0418	.203	46%	A B C D	H I J K M N	O P Q R S	T U W X
A012	.056	60	DE11	5.9	.296	.026	.0060	.088	46%	A B C D E G	H I J K M N	O P Q R S	T U W X
C071A	.206	35	D15	1.2	.518	.096	.0390	.185	46%	A B C E F G	H I J K L M N	O P Q R S	T U V W X
B016	.225	130	DE12	4.8	.520	.106	.0433	.204	47%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B012	.221	60	DE9	3.6	.530	.106	.0441	.200	47%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C071A	.206	35	B7	1.2	.495	.097	.0377	.196	47%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C033B	.059	150	BC12	4.8	.078	.028	.0017	.359	47%	A B C F G	H I J K L M	O P Q R S	T U V W
A022	.061	230	FG3	3.6	.085	.029	.0019	.341	47%		H I J K L M N	P Q R S	T U V W X
B016	.225	130	CD4	2.4	.534	.106	.0444	.199	47%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B003	.223	32	BC11	5.9	.526	.106	.0438	.202	47%	A B C D F	H I J K L M N	O P Q R S	T U V X
C006A	.059	55	BC10	4.8	.150	.028	.0033	.187	47%	A B C D	H I K	O P	T U
B012	.221	60	CD3	3.6	.534	.108	.0453	.202	48%	A B C D G	H I J K L M N	O P Q R S	T U V W X
C004B	.060	45	F9	3.6	.083	.029	.0019	.349	48%	A B C E F G	H I J K L M N	O P Q R S	T U V W X

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY A/T

B011	.224	60	CD5	1.2	.530	.108	.0449	.204	48%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C001A	.052	085	D11	5.9	.242	.025	.0047	.103	48%	A B C E F G	H I J K L M	O P Q R	T U W X
B023	.227	230	DE5	1.2	.534	.110	.0461	.206	48%	A B C D G	H I J K M N	O P Q R S	T U V W X
B014	.221	130	DE7	1.2	.522	.108	.0443	.207	48%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B010	.224	60	CD8	2.4	.550	.110	.0475	.200	49%	A B C D E F G	H I J K M N	O P Q R S	T U V W X
B021	.227	230	FG6	0.0	.538	.112	.0473	.208	49%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C016A	.059	50	E9	3.6	.248	.030	.0058	.121	50%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C034A	.059	80	DE14	2.4	.080	.030	.0019	.375	50%	A B C D E F G	H I K L M N	O P Q R S	T U V W X
A004	.063	30	DE9	3.6	.340	.032	.0085	.094	50%	A B C D	H I J K	O P	T U
C027B	.059	50	C7	1.2	.083	.030	.0020	.361	50%	B D E F G	H I J K L M N	O P Q R S	T U V W X
C072A	.207	50	E6	0.0	.326	.105	.0269	.322	50%	A E F G	H I J K L M N	O P Q R S	T U V W X
B008	.226	60	DE7	1.2	.520	.114	.0465	.219	50%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C091B	.205	145	BC11	5.9	.500	.103	.0404	.206	50%	A B D E F G	H I J K L M N	O P Q S	T U V W X
C028A	.059	50	D7	1.2	.079	.030	.0019	.380	50%	A B E	H I J K L M N	O P Q R S	T U V W X
C093B	.208	150	D11	5.9	.492	.107	.0413	.217	51%	C D E F G	H I J K L M N	O P S	T U W X
C060B	.209	60	E10	4.8	.475	.108	.0403	.227	51%	E F G	H I J K L M N	P Q R S	T U V W X
C066A	.206	50	E7	1.2	.459	.107	.0386	.233	51%	A B D E F G	H I J K L M N	O P Q R S	T U V W X
C078A	.207	40	D15	1.2	.494	.106	.0411	.215	51%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C104B	.210	280	BC11	5.9	.513	.109	.0439	.212	51%	D E F G	H I J K L M N	O P Q R S	T U V W X
C105A	.209	140	D15	1.2	.495	.108	.0420	.218	51%	A B C D F G	H I J K L M N	O P Q R S	T U V W X
C107A	.210	140	D11	5.9	.503	.109	.0430	.217	51%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B011	.224	60	BC11	5.9	.496	.116	.0452	.234	51%	A B C D	H I J K L M N	O P Q R S	T U V W X
C079A	.211	55	BC12	4.8	.283	.109	.0242	.385	51%	E	H I J K L M N	O P Q R S	T U V X
C066B	.206	50	D11	5.9	.489	.107	.0411	.219	51%	A B D E F G	H I J K L M N	O P Q R S	T U V W X
C026A	.056	290	C8	2.4	.083	.029	.0019	.349	51%	D E F G	H I K L M N	O P Q R S	T U V W
C113A	.210	280	BC6	0.0	.514	.111	.0448	.216	52%	A B C D E F G	H I J K L M N	O P Q R S	T U W X
C033A	.059	150	F6	0.0	.082	.031	.0020	.378	52%	D F	H I J K L M N	O P Q R S	T U V W X
C048A	.059	160	F12	4.8	.079	.031	.0019	.392	52%	A E F G	H I J K L M N	O P Q R S	T U V W X
C016A	.059	50	DE5	1.2	.253	.031	.0062	.123	52%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C112A	.207	175	D10	4.8	.520	.109	.0445	.210	52%	A D E F G	H I J K L M N	O P Q R S	T U V W X
C105B	.209	140	D11	5.9	.466	.109	.0399	.234	52%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C076A	.211	50	B11	5.9	.484	.111	.0422	.229	52%	A B D E F G	H I J K L M N	O P Q R S	T U V W X
C060A	.209	60	C14	2.4	.519	.110	.0448	.212	52%	A B D E F G	H I J K L M N	O P Q R S	T U V W X
C066A	.206	50	C15	1.2	.508	.110	.0439	.217	53%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
A004	.063	30	BC12	4.8	.111	.034	.0030	.306	53%	A C	H I J K L M N	O P Q R S	T U W X
C031A	.060	150	E6	0.0	.249	.032	.0063	.129	53%	A D E F G	H I J K L M N	O P Q R S	T U V W X
B017	.212	130	CD8	2.4	.474	.114	.0424	.241	53%	A B C D E F G	H I J K M N	O P Q R S	T U V W X
C040B	.058	290	CD11	5.9	.086	.031	.0021	.360	53%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C031A	.060	150	B14	2.4	.249	.033	.0065	.133	54%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C046B	.060	150	E10	4.8	.261	.033	.0068	.126	54%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C112A	.207	175	F6	0.0	.521	.112	.0458	.215	54%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C060A	.209	60	C6	0.0	.535	.114	.0479	.213	54%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C062B	.210	40	E11	5.9	.539	.115	.0487	.213	54%	A B D E F G	H I J K L M N	O P Q R S	T U V W X
C113A	.210	280	BC10	4.8	.499	.114	.0447	.228	54%	D E F G	H I J K L M N	O P Q R S	T U W X
C020A	.059	40	C8	2.4	.085	.033	.0022	.388	55%	A C D E F G	H I J K L M N	O P Q R S	T U V W X
C072B	.207	50	E14	2.4	.523	.114	.0468	.218	55%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C048A	.059	160	BC12	4.8	.085	.033	.0022	.388	55%	A C D E F G	H I J K L M N	O P Q R S	T U V W X
C047A	.059	160	E10	4.8	.108	.033	.0028	.306	55%	A E G	H I J K L M N	O P Q R S	T U V W X
C105A	.209	140	C7	1.2	.543	.116	.0494	.214	55%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C087A	.209	160	BC6	0.0	.559	.115	.0505	.206	55%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C016A	.059	50	DE13	3.6	.257	.033	.0067	.128	55%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C093A	.208	150	D7	1.2	.535	.116	.0487	.217	55%	A B C D E F G	H I J K L M N	O P S	T U W X
C002A	.058	60	EF9	3.6	.082	.032	.0021	.390	55%	B C E F G	H I J K L M N	O P Q R S	T U V W X
C113A	.210	280	E14	2.4	.505	.119	.0475	.234	56%	A B C D E F G	H I J K L M N	O P Q R S	T U W X

FLAW SENSITIVITY EVALUATION (CONT)

SORTED BY A/T

C022B	.057	55	D14	2.4	.241	.C32	.0061	.133	56%	A B D E F G	H I J K L M N	O P Q R S	T U V W X
C072A	.207	50	E10	4.8	.568	.117	.0522	.206	56%	A B E F G	H I J K L M N	O P Q R S	T U V W X
C043A	.057	160	E9	3.6	.260	.C33	.0067	.127	57%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C022A	.057	55	C10	4.8	.258	.C33	.0067	.128	57%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B012	.221	60	EF6	0.0	.478	.126	.0473	.264	57%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C035A	.061	220	D9	3.6	.268	.035	.0074	.131	57%	A B D E F G	H I J K L M N	O P Q R S	T U V W X
C005A	.061	45	C10	4.8	.258	.C35	.0071	.136	57%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C046A	.060	150	C6	0.0	.257	.C35	.0071	.136	58%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B024	.211	230	DE6	0.0	.472	.124	.0459	.263	58%	A B C D E F G	H I J K M N	O P Q R S	T U V W X
A016	.058	125	DE7	1.2	.288	.C34	.0077	.118	58%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C008A	.058	50	C14	2.4	.275	.C34	.0073	.124	58%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
A011	.062	60	EF13	3.6	.098	.C36	.0028	.367	58%	A	H I J K L M N	O P Q R S	T U V W X
A018	.061	130	CD2	4.8	.123	.036	.0035	.293	59%	A D	I L M N	O P Q R S	T U V W X
C005A	.061	45	C6	0.0	.247	.C36	.0070	.146	59%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C054A	.061	300	B15	1.2	.101	.037	.0029	.366	60%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C087A	.209	160	BC14	2.4	.710	.126	.0702	.177	60%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B004	.211	32	DE5	1.2	.478	.128	.C480	.268	60%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B006	.211	32	EF9	3.6	.474	.128	.0476	.270	60%	A B C D E F G	H I J K L M N	O P Q R S	T U X
C049A	.061	200	CD6	0.0	.279	.C37	.0081	.133	60%	A B C E F G	H I J K L M N	O P Q R S	T U V W X
C008A	.058	50	D6	0.0	.259	.C35	.0071	.135	60%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C093A	.208	150	E15	1.2	.610	.126	.0603	.207	60%	A B C D E F G	H I J K L M N	O P S	T U V W X
C049A	.061	200	DE14	2.4	.262	.C37	.0076	.141	60%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C029A	.059	120	D10	4.8	.252	.C36	.0071	.143	61%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
B006	.211	32	CD7	1.2	.492	.130	.0502	.264	61%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C046A	.060	150	C14	2.4	.261	.037	.0076	.142	61%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C043A	.057	160	DE13	3.6	.258	.C35	.0071	.136	61%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C043A	.057	160	DE5	1.2	.256	.035	.0070	.137	61%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
A016	.058	125	EF10	4.8	.29C	.C36	.0082	.124	62%	A B C D E F G	H I J K L M N	O P Q R S	T U W X
B005	.213	32	EF7	1.2	.482	.136	.0515	.282	63%	A B C D E F G	H I J K L M N	O P Q R S	T U V X
B015	.225	125	EF7	1.2	.490	.144	.C554	.294	63%	A B C D E F G	H I J K M N	O P Q R S	T U V W
A012	.056	60	CC7	1.2	.340	.036	.0096	.106	64%	A B C D G	H I J K M N	O P Q R S	T U V W X
A006	.062	32	FG3	3.6	.129	.C40	.0041	.310	64%	A C G	H I J K M N	O P Q R S	U V W X
C022B	.057	55	C6	0.0	.287	.C38	.0086	.132	66%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
A003	.054	32	BC8	2.4	.318	.C36	.0090	.113	66%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
A011	.062	60	EF6	0.0	.352	.C42	.0116	.119	67%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
A014	.064	125	CD14	2.4	.342	.044	.0118	.129	68%	A B C D E F G	H I K L M N	P Q R S	T U V W X
A011	.062	60	CD9	3.6	.362	.C44	.0125	.122	70%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C104A	.210	280	D15	1.2	.979	.149	.1145	.152	70%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C005B	.061	45	E14	2.4	.247	.C43	.0083	.174	70%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
C008B	.058	50	C10	4.8	.342	.C41	.0110	.120	70%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
A024	.057	230	CD12	4.8	.334	.C4C	.0105	.120	70%	A B C D	H I J K M N	O P Q R	T U V W X
A018	.061	130	CD12	4.8	.326	.C44	.0113	.135	72%	A B C D E G	I J K L M N	O P Q R S	T U V W X
A024	.057	230	DE9	3.6	.352	.C42	.0116	.119	73%	A B C D G	H I J K M N	O P Q R S	T U V W X
C001B	.052	085	D6	0.0	.279	.C38	.0083	.136	73%	A B E F G	H I J K L M N	O P Q R S	T U V W X
A005	.063	32	CD11	5.9	.384	.C46	.0139	.120	73%	A B C D F G	H I J K L M N	O P Q R S	T U V W X
A006	.062	32	CD6	0.0	.37C	.C46	.0134	.124	74%	A B C D E F G	H I J K M N	O P Q R S	T U V W X
C001B	.052	085	D18	2.4	.269	.C39	.0082	.145	75%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X
A018	.061	130	CD9	3.6	.372	.046	.0134	.124	75%	A B C D F G	I J K L M N	O P Q R S	T U V W X
A010	.060	60	CD8	2.4	.362	.C46	.0131	.127	76%	A B C D E	H I J K L M N	O P Q R S	T U V W X
A006	.062	32	DE11	5.9	.37C	.C48	.0139	.130	77%	A B C D F G	H I J K M N	O P Q R S	T U V W X
A023	.059	230	CD10	4.8	.372	.C46	.0134	.124	77%	A B C D	H I J K	O P	T U
C074B	.208	45	BC7	1.2	.496	.178	.0693	.359	85%	A B C D E F	H I K L M N	O P Q R S	T U V W X
A022	.061	230	EF7	1.2	.356	.C54	.0151	.152	88%	A B C D E F G	H I J K L M N	O P Q R S	T U V W X

ROCKWELL INTERNATIONAL
SPACE DIVISION
NONDESTRUCTIVE EVALUATION TECHNOLOGY GROUP
DEPARTMENT 044-130 QUALITY ENGINEERING
FLAW SENSITIVITY EVALUATION

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SAMPLE NUMBER	THICK	FINISH	LOCATION	INCLD ANGLE	LENGTH (2C)	DEPTH (A)	AREA	A/2C	A/T	X-RAY A B C D E F G	PENETRANT H I J K L M N	ULTRASONIC O P Q R S	E/C T U V W X
C018A	.061	50	D6	0.0	.007	.001	.0000	.143	1%				
C021A	.059	55	C7	1.2	.010	.004	.0000	.400	6%		H J	O	
C042A	.069	55	D11	5.9	.011	.CC4	.0000	.364	5%	D	H K M N	P Q R S	T W
C041A	.060	260	E11	5.9	.015	.CC3	.0000	.200	5%			R	
C014A	.061	40	DE12	4.8	.017	.CC3	.0000	.176	4%			O	
C041A	.060	260	D7	1.2	.018	.CC3	.0000	.167	5%			O R	
C025A	.061	45	BC14	2.4	.031	.0C2	.0000	.065	3%		L M	O P Q R S	
C044A	.060	140	C6	0.0	.025	.CC3	.0001	.120	5%			O	
C018A	.061	50	B14	2.4	.025	.CC3	.0001	.120	4%		I K L	O P R S	
C053A	.061	240	E11	5.9	.021	.CC4	.0C01	.190	6%	G	H J K M	O P R S	
C018B	.061	50	BC14	2.4	.C21	.CC4	.0001	.190	6%		K L	P R S	
C077B	.206	45	C13	3.6	.02C	.CC5	.0C01	.250	2%				
C054A	.061	300	CD11	5.9	.020	.CC5	.0C01	.250	8%				
C019A	.058	60	B8	2.4	.03C	.0C4	.0001	.133	6%	A B	H I K L N	P R S	
A003	.054	32	EF11	5.9	.027	.CC5	.0C01	.185	9%				
C103B	.208	140	BC9	3.6	.017	.008	.0C01	.471	3%		H J L M	P Q	
A004	.063	30	EF6	0.0	.022	.CC7	.0C01	.318	11%	E F G	L M N	Q R S	V W X
C052A	.061	180	EF10	4.8	.035	.CC5	.0001	.143	8%		H J K M N	O P Q R S	W X
C084A	.210	45	E6	0.0	.028	.CC7	.0002	.250	3%	G	I L M	O P R S	U
C018B	.061	50	CD13	3.6	.035	.CC6	.0002	.171	9%	D F	K L M	P Q R S	W
A016	.058	125	BC3	3.6	.034	.CC7	.0C02	.206	12%				
C068A	.209	45	C7	1.2	.03C	.CC8	.0002	.267	3%		H I J L M	O P R S	
C073B	.209	045	B11	5.9	.035	.CC7	.0002	.200	3%		H I L	P S	
C045A	.064	145	DE14	2.4	.041	.0C6	.0002	.146	9%	E G	H I K L M N	O P Q R	W
C028A	.059	50	D15	1.2	.032	.CC8	.0002	.250	13%	D	I J K L M	O P	T
C052A	.061	180	EF12	4.8	.041	.CC7	.0002	.171	11%		H I J K M N	O P Q R S	W X
C020A	.059	40	E7	1.2	.032	.CC9	.0002	.281	15%		H I K L M	O P Q R S	U
C052A	.061	180	CD11	5.9	.045	.CC6	.0002	.122	9%		H I K M N	O P Q R S	W X
C025A	.061	45	B10	4.8	.03C	.C1C	.0002	.333	16%		H L M	O P Q R S	
C011A	.062	40	D6	0.0	.044	.CC7	.0002	.159	11%		H I K L M N	O P Q R S	U W
C025A	.061	45	FG12	4.8	.015	.C21	.0002	****	34%				
C045A	.064	145	CD12	4.8	.045	.0C7	.0002	.156	10%	G	H K L M N	O P Q R S	W
C030A	.060	160	C6	0.0	.045	.CC8	.0003	.178	13%		H I J K L M N	O P Q R S	V W
A023	.059	230	FG3	3.6	.048	.CC8	.0003	.167	13%				
C017A	.057	60	B15	1.2	.04C	.C1C	.0C03	.250	17%		H K L M N	O P R	V W X
C100A	.208	205	F6	0.0	.04C	.010	.0003	.250	4%	E F G	H I L M N	Q S	T V W X
C068A	.209	45	CD15	1.2	.038	.C11	.0003	.289	5%		H I K L M	O P R S	
C044A	.060	140	BC10	4.8	.026	.017	.0003	.654	28%	E F G	J L M N	P Q R S	T V W X
C100A	.208	205	B8	2.4	.041	.C11	.0004	.268	5%		H I		
C055A	.054	300	B15	1.2	.041	.C11	.0004	.268	20%		H I J K M	O P Q R	U W
C077A	.206	45	E9	3.6	.045	.C11	.0004	.244	5%		K L M N	O P Q R S	U V W X
C047B	.059	160	C8	2.4	.036	.014	.0004	.389	23%	F	H I J K L M N	P Q R S	U W
C048A	.059	160	EF9	3.6	.026	.020	.0004	.769	33%	A E G	H I J K L M N	O P Q R S	U V W X

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FLAW SENSITIVITY EVALUATION (CONT)

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C042B	.069	55	BC8	2.4	.055	.C1C	.0004	.182	14%	B H I J K L M N O P Q R S V W X
C044A	.060	140	B14	2.4	.033	.C17	.0004	.515	28%	H K M N O P Q R U
C044B	.060	140	CD8	2.4	.052	.C11	.0004	.212	18%	D E F H J K L M N O P Q R S V W
C116A	.207	180	F6	0.0	.042	.C14	.0005	.333	6%	H I J O P Q S U W X
C045B	.064	145	D9	3.6	.061	.C1C	.0005	.164	15%	E F H I K M N O P Q R S U W
C015B	.061	045	BC13	3.6	.051	.C12	.0005	.235	19%	A F G H I J K N P Q R S T U W X
C027A	.059	50	B15	1.2	.048	.C13	.0005	.271	22%	E F H I J K L M N O P Q R S U V W
C003B	.059	45	D10	4.8	.058	.C11	.0005	.190	18% 70	G H I J K L M N O P Q R S U W
C044B	.060	140	BC12	4.8	.058	.C11	.0005	.190	18%	H L M N O Q R S T W
C073A	.209	045	F9	3.6	.046	.C14	.0005	.304	6%	H I L M N O P R S V
C030A	.060	160	C12	4.8	.061	.C11	.0005	.180	18%	G H I J K L M N O P Q R S T U V W X
C011A	.062	40	D12	4.8	.062	.C11	.0005	.177	17%	E H I K L M N O P Q R S U V W X
C020A	.059	40	BC11	5.9	.047	.C15	.0006	.319	25%	A B C E F G H I J K L M N O P Q R S U V W
C039B	.061	173	F12	4.8	.065	.C11	.0006	.169	18%	H I J K M N O P Q R S T U V W X
C116A	.207	180	B6	0.0	.057	.C13	.0C06	.228	6%	I J K L N O P Q U W X
A018	.061	130	FG7	1.2	.055	.C14	.0006	.255	22%	I L M N Q R S U V W X
C015A	.061	045	D11	5.9	.056	.C14	.0006	.250	22%	A D E F G H I J K N O P Q R T U W X
C084A	.210	45	C8	2.4	.C49	.C16	.0006	.327	7%	G H I K L M O P R S U X
C047A	.059	160	DE15	1.2	.047	.C17	.0C06	.362	28%	E H I L M N O P Q R S U V W
C015B	.061	045	EF9	3.6	.C62	.C13	.0006	.210	21%	F H I J K N P Q R S T U V W X
A012	.056	60	DE6	0.0	.062	.013	.0006	.210	23%	L M P T U W X
C048A	.059	160	B10	4.8	.045	.C18	.0C06	.400	30%	A D G H I J K L M N O P Q R S U V W
C074B	.208	45	C13	3.6	.054	.015	.0006	.278	7%	H K L M N O P R S T U X
C014A	.061	40	CD15	1.2	.068	.C12	.0006	.176	19%	A D H I J K L M N O P Q R S T U V W
C039B	.061	173	C11	5.9	.063	.C13	.0006	.206	21%	B D E F G H I J K L M N O P Q R S T U V W X
A017	.061	130	DE11	5.9	.064	.C13	.0C07	.203	21%	M Q R S U W X
C033A	.059	150	DE14	2.4	.049	.C17	.0C07	.347	28%	H M N O Q R U V W
C011A	.062	40	D9	3.6	.065	.C13	.0007	.200	20% 350	H I J K L M N O P Q R S T U V W X
C030A	.060	160	BC13	3.6	.077	.C11	.0007	.143	18%	G H I J K L M N O P Q R S T U V W X
C003A	.059	45	EF12	4.8	.079	.C11	.0007	.139	18%	A B E G H J K L M N P Q R S T U V W X
C039B	.061	173	B8	2.4	.067	.C13	.0007	.194	21%	A B E F G H I J K L M N O P Q R S T U W
C101A	.210	300	CD14	2.4	.055	.C16	.0C07	.291	7%	D H J K L M O P S U W X
C039B	.061	173	E9	3.6	.068	.013	.0007	.191	21%	A E F G H I J K M N O P Q R S T U V W X
A015	.059	125	EF5	1.2	.C59	.C15	.0007	.254	25%	L M Q R S T U V
A024	.057	230	BC7	1.2	.064	.C14	.0007	.219	24%	K M N P Q R S T U
C100A	.208	205	EF9	3.6	.055	.C17	.0C07	.309	8%	H T
C002A	.058	60	EF11	5.9	.067	.C14	.0C07	.209	24%	F G H I J K L M N O P R S U W X
C045B	.064	145	EF14	2.4	.067	.C15	.0008	.224	23% 40	G H I K L M N P Q R S U W X
A012	.056	60	EF9	3.6	.069	.C15	.0C08	.217	26%	G M P Q S T U V W X
C053A	.061	240	B8	2.4	.069	.C15	.0008	.217	24%	D E F G H I J K L M N O P Q R S U W X
C013A	.059	35	E9	3.6	.077	.C14	.0008	.182	23%	B E F G H I J K L M O P Q R S T U V W X
C012A	.062	35	F6	0.0	.077	.014	.0008	.182	22%	A D H I K L M N O P Q R S T U V W X
A002	.059	30	CD13	3.6	.068	.C16	.0009	.235	27%	H I K L M P Q R S U V X
A017	.061	130	EF7	1.2	.065	.C17	.0C09	.262	27%	M Q R S U V W X
C003B	.059	45	D14	2.4	.074	.015	.0009	.203	25%	E H I J K L M N O P Q R S T U W X
C019B	.058	60	E12	4.8	.07C	.C16	.0009	.229	27%	E F G H I K L M N O P Q R S T U V W
C018A	.061	50	C11	5.9	.072	.C16	.0009	.222	26%	E F G H I J K L M O P Q R S T U V W
C014A	.061	40	F7	1.2	.077	.C15	.0009	.195	24%	H I J K L M N O P Q R S U V W
C068A	.209	45	F9	3.6	.061	.C19	.0009	.311	9%	H I J L M N O P R S T U V W X
C034A	.059	80	BC8	2.4	.058	.C2C	.0009	.345	33%	A D F H I K L M N O P Q R S T U W
C028B	.059	50	BC11	5.9	.059	.C2C	.0009	.339	33%	G H I J K P Q R T V W
C019B	.058	60	E10	4.8	.079	.C15	.0C09	.190	25%	A B C D E F G H I K L M N O P Q R S T U V W X
C109B	.208	160	EF12	4.8	.066	.018	.0009	.273	8%	E H J K O P Q R T U V W X
C036A	.061	140	BC12	4.8	.073	.C17	.0C10	.233	27%	A D E F G H I J K L M N O P Q R S T U V W X

FLAW SENSITIVITY EVALUATION (CONT)

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A023	.059	230	CD5	1.2	.069	.018	.0C10	.261	30%	H J K L M N U V W X
C019B	.058	60	F15	1.2	.083	.C15	.0010	.181	25%	A D E F G H I K L M N O P Q R S T U V W X
C033A	.059	150	EF10	4.8	.060	.C21	.0010	.350	35%	E H I J K L M N O P Q R S T U W X
C047B	.059	160	B11	5.9	.062	.C21	.0010	.339	35%	E H I J K L M N P Q R S U V W
C069A	.209	50	E7	1.2	.066	.02C	.0010	.303	9%	H I J K L M N O P R S T U V W
C054B	.061	300	E17	1.2	.063	.021	.0010	.333	34%	A B C D H I J K L M N O P Q R S T U V W X
C069A	.209	50	E13	3.6	.064	.C21	.0011	.328	10%	H J K L M N O P R S T U V W X
C025A	.061	45	D8	2.4	.079	.018	.0011	.228	29%	A B D F G H I K L M N O P Q R S U V W X
C084A	.210	45	A10	4.8	.069	.021	.0C11	.304	9%	E I K L M N O P Q R S U V W X
A022	.061	230	BC13	3.6	.069	.C21	.0C11	.304	34%	I J K P Q R S T U
C019A	.058	60	C13	3.6	.086	.C17	.0011	.198	29%	A B C D E F G H I K L M N P Q R S T V W X
C068A	.209	45	B10	4.8	.064	.C23	.0C12	.359	11%	H I J K L M N O P R S T U W X
C101A	.210	300	C6	0.0	.064	.C23	.0C12	.359	10%	D H I J K L M N O P Q R U X
C034A	.059	80	BC16	0.0	.062	.024	.0012	.387	40%	A B E F G H I K L M N O P Q R S T U V W
C033B	.059	150	C08	2.4	.062	.C24	.0C12	.387	40%	A E F G H I J K L M O P Q R S T U V W
C109A	.208	160	BC14	2.4	.063	.C24	.0012	.381	11%	H I J K L M N O P Q R S U V X
C055B	.054	300	B8	2.4	.069	.022	.0C12	.319	40%	D E F G H I J K L M N P Q R S T U V W X
C052A	.061	160	BC14	2.4	.09C	.C17	.0C12	.189	27%	A B D E F G H I J K L M N O P Q R S T U V W X
A006	.062	32	DE8	2.4	.081	.C19	.0012	.235	30%	M P Q R S U V X
C007A	.059	50	BC11	5.9	.06C	.C26	.0012	.433	44%	A E F G H K L M N O P Q R S T U W
C002A	.058	60	E7	1.2	.06C	.026	.0012	.433	44%	F H I J K L M N O P Q R S T U V W X
C007A	.059	50	EF7	1.2	.C87	.C18	.0C12	.207	30%	C F G H K L M N O P Q R S T U V W X
A005	.063	32	BC2	4.8	.075	.C21	.0C12	.280	33%	H J L M N Q R S T U V X
C116A	.207	180	B9	3.6	.072	.022	.0012	.306	10%	H I J K L N O P Q R T U W X
C009A	.057	50	C06	0.0	.066	.024	.0012	.364	42%	E G H I J K L M N O P Q R S T U V W X
A009	.059	60	EF5	1.2	.073	.C22	.0013	.301	37%	H J K L M P Q R S T U V W X
A006	.062	32	EF13	3.6	.067	.C24	.0C13	.358	38%	E J K M N P Q R S U V W X
C108A	.209	150	F11	5.9	.07C	.023	.0013	.329	11%	H O P S T U
A020	.060	230	CD14	2.4	.085	.C19	.0013	.224	31%	F H I L M N P Q R S T U V W X
C073A	.209	045	E14	2.4	.071	.C23	.0013	.324	11%	H I K L M N O P Q R S T U V W
C019B	.058	60	F7	1.2	.086	.C19	.0013	.221	32%	D E F G H I K L M N O P Q R S T U W X
A010	.060	60	BC15	1.2	.078	.C21	.0013	.269	35%	A B D H I J K L M N P Q R S T U W X
C003A	.059	45	EF9	3.6	.082	.C20	.0013	.244	33%	E F G H I J K L M N P Q R S T U V W X
C047A	.059	160	F7	1.2	.067	.C25	.0013	.373	42%	A E F H I J K L M N O P Q R S T U V W X
C041A	.060	260	CD15	1.2	.080	.C21	.0013	.263	35%	F G H I J K L M N O P R S T U V W X
C006A	.059	55	E9	3.6	.084	.020	.0013	.238	33%	H I K P T U
C045A	.064	145	B6	0.0	.066	.C26	.0013	.394	40%	I Q
C052A	.061	180	B9	3.6	.C86	.020	.0014	.233	32%	A B E F G H I J K L M N O P Q R S T U V W X
A010	.060	60	EF3	3.6	.075	.C23	.0014	.307	38%	H I J K L M N P Q R S T U V W X
C116A	.207	180	F13	3.6	.069	.C25	.0014	.362	12%	H I O P Q S U W X
C108A	.209	150	D15	1.2	.073	.024	.0014	.329	11%	H I J K L M N O P Q R S T U V W X
A008	.059	60	EF8	2.4	.08C	.022	.0014	.275	37%	H I J K L M N P Q R S T U V W X
A024	.057	230	BC2	4.8	.084	.021	.0C14	.250	36%	N P Q R S T U V
C069A	.209	50	E15	1.2	.071	.025	.0014	.352	11%	H J K L M O P R S T U V W
A023	.059	230	DE15	1.2	.089	.C20	.0014	.225	33%	H I J K L M N P T U V W X
C017A	.057	60	E6	0.0	.069	.026	.0014	.377	45%	E F G H I K L M N O P Q R S T U V W X
C007A	.059	50	C8	2.4	.067	.C27	.0014	.403	45%	H K L M N O P Q R S T U V W X
C034A	.059	80	EF11	5.9	.07C	.C27	.0015	.386	45%	H L M N O P Q R S T U V W X
C103B	.208	140	E13	3.6	.073	.C26	.0015	.356	12%	H J K L M O P Q R S T U W
C055A	.054	300	E7	1.2	.076	.C25	.0C15	.329	46%	F G H I J K L M N O P Q R S T U V W X
C018A	.061	50	B13	3.6	.091	.C21	.0C15	.231	34%	A D E F G H I J K L M N O P Q R S T U V W X
C070A	.206	45	BC7	1.2	.087	.C22	.0C15	.253	10%	E H I J K L M N O P R S T U V W X
C081A	.208	40	B7	1.2	.075	.C26	.0015	.347	12%	D H I J K L M O P R S T U V W X

FLAW SENSITIVITY EVALUATION (CONT)

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A017	.061	130	BC15	1.2	.089	.022	.0015	.247	36%	H I J K M P Q R S U V W X
C094A	.210	140	EF9	3.6	.076	.026	.0016	.342	12%	H I J K L M N P S T U V W X
C073A	.209	045	EF12	4.8	.08C	.025	.0016	.313	11%	I K L M N O P Q R S T U V W
C039B	.061	173	D6	0.0	.091	.022	.0016	.242	36%	A D E F G H I J K L M N O P Q R S T U W X
C050B	.063	140	E8	2.4	.096	.021	.0016	.219	33%	A B F G H I J K L M N O P Q R S T U V W X
C110A	.209	145	BC10	4.8	.075	.C27	.0016	.360	12%	H I J K L N O P Q R S T U W X
A005	.063	32	FG4	2.4	.085	.C24	.0016	.282	38%	H I J K L M N P Q R S T U V W X
A018	.061	130	FG2	4.8	.081	.026	.0017	.321	42%	I L M N P Q R S T U V W X
A009	.059	60	CD10	4.8	.090	.024	.0017	.267	40%	H J K L M N P Q R S T U W X
A024	.057	230	FG7	1.2	.104	.021	.0017	.202	36%	A H K M N P Q R S T U V W X
C033B	.059	150	BC12	4.8	.078	.C28	.0017	.359	47%	A B C F G H I J K L M O P Q R S T U V W
C117A	.208	220	BC7	1.2	.078	.C28	.0017	.359	13%	E F G H I J L M N O P Q R S U V W X
C084A	.210	45	DE14	2.4	.080	.C28	.0018	.350	13%	D G H I K L M N O P Q R S T U V W X
C068A	.209	45	F14	2.4	.084	.C27	.0018	.321	12%	H I K L M N O P R S T U V W X
C021B	.059	55	E10	4.8	.092	.025	.0018	.272	42%	B D E F G H I J K L M N O P Q R S T U V W X
A021	.051	230	EF8	2.4	.197	.C12	.0019	.061	23%	A D E F G H K L M N P Q R S T U V W X
C028A	.059	50	D7	1.2	.079	.C3C	.0019	.380	50%	A B E H I J K L M N O P Q R S T U V W X
C034A	.059	80	DE14	2.4	.08C	.03C	.0019	.375	50%	A B C D E F G H I K L M N O P Q R S T U V W X
A017	.061	130	EF3	3.6	.C96	.025	.0019	.260	40%	H I J K M P Q R S U V W X
C026A	.056	290	C8	2.4	.083	.C29	.0019	.349	51%	D E F G H I K L M N O P Q R S T U V W
C004B	.060	45	F9	3.6	.C83	.C29	.0019	.349	48%	A B C E F G H I J K L M N O P Q R S T U V W X
C039B	.061	173	D14	2.4	.097	.C25	.0019	.258	40%	A D E F G H I J K L M N O P Q R S T U V W X
C048A	.059	160	F12	4.8	.C79	.C31	.CC19	.392	52%	A E F G H I J K L M N O P Q R S T U V W X
A022	.061	230	FG3	3.6	.085	.C29	.0019	.341	47%	H I J K L M N P Q R S T U V W X
C027B	.059	50	C7	1.2	.C83	.03C	.0020	.361	50%	B D E F G H I J K L M N O P Q R S T U V W X
A011	.062	60	BC15	1.2	.086	.C29	.0C20	.337	46%	H J K L M N O P Q R S T U V W X
C109A	.208	160	BC6	0.0	.076	.033	.0020	.434	15%	H I J K O P T U
A005	.063	32	EF7	1.2	.094	.C27	.0020	.287	42%	F H I J K L M N P Q R S T U V W X
C033A	.059	150	F6	0.0	.082	.C31	.0020	.378	52%	D F H I J K L M N O P Q R S T U V W X
C042B	.069	55	EF13	3.6	.095	.C27	.0C20	.284	39%	B D E F G H I J K L M N P Q R S U V W X
C100A	.208	205	D10	4.8	.076	.034	.0020	.447	16%	E F G H I J K L M N O P Q R S T U V W X
C002A	.058	60	EF9	3.6	.082	.C32	.0021	.390	55%	B C E F G H I J K L M N O P Q R S T U V W X
C045B	.064	145	CD7	1.2	.102	.C26	.0021	.255	40%	A B E F H I J K L M N O P Q R S T U V W X
C040B	.058	290	CD11	5.9	.086	.031	.0021	.360	53%	A B C D E F G H I J K L M N O P Q R S T U V W X
C086A	.206	35	B11	5.9	.097	.C28	.0C21	.289	13%	H I J K L M N O P R S T U V W X
C020A	.059	40	C8	2.4	.085	.C33	.0022	.388	55%	A C D E F G H I J K L M N O P Q R S T U V W X
C048A	.059	160	BC12	4.8	.085	.C33	.0022	.388	55%	A C D E F G H I J K L M N O P Q R S T U V W X
C081A	.208	40	C13	3.6	.C88	.033	.0023	.375	15%	D H I J K L M N O P R S T U V W X
B024	.211	230	BC3	3.6	.109	.C27	.0023	.248	12%	H J K L M N Q R S T U V W X
C111A	.209	100	EF15	1.2	.092	.C32	.0023	.348	15%	H I J K M N O P Q R S T U V W X
C101A	.210	300	BC9	3.6	.094	.C32	.0C24	.340	15%	D H I J K L M N O P Q R S T U V W X
C110A	.209	145	F8	2.4	.098	.C31	.CC24	.316	14%	E H I J K L M N O P Q R S T U V W X
C086A	.206	35	CD9	3.6	.095	.C32	.0024	.337	15%	H I J K L M N O P R T U V W X
C100A	.208	205	B13	3.6	.097	.032	.CC24	.330	15%	F G H I J K L M N O P R S T U V W X
C108A	.209	150	B11	5.9	.095	.C36	.0027	.379	17%	H I J K L M N O P Q R S T U V W X
C094A	.210	140	D7	1.2	.098	.C35	.0027	.357	16%	C F H I J K L M N P S T U V W X
C069A	.209	50	B10	4.8	.C96	.036	.0027	.375	17%	H I J K L M O P Q R S T U V W X
B004	.211	32	BC14	2.4	.116	.03C	.0027	.259	14%	H J K L M N P Q R S T U X
C081A	.208	40	E11	5.9	.100	.C35	.0027	.350	16%	D H I J K L M N O P R S T U V W X
A011	.062	60	EF13	3.6	.098	.C36	.0028	.367	58%	A H I J K L M N O P Q R S T U V W X
C047A	.059	160	E10	4.8	.108	.C33	.0028	.306	55%	A E G H I J K L M N O P Q R S T U V W X
C101A	.210	300	EF11	5.9	.103	.C35	.0028	.340	16%	D E F G H I J K L M N O P Q S T U V W X
B024	.211	230	FG3	3.6	.118	.C31	.0C29	.263	14%	H J K L M P Q R S T U V W X
C073B	.209	045	C9	3.6	.060	.C61	.0029	****	29%	D E F G H I J K L M N O P Q R S T U V W X
C074B	.208	45	CD9	3.6	.103	.036	.0029	.350	17%	D H I J K L M N P Q R S U V W X
C101A	.210	300	BC12	4.8	.106	.035	.CC29	.330	16%	D G H I J K L M N O P Q R S T U V W X
C054A	.061	300	B15	1.2	.101	.037	.0C29	.366	60%	A B C D E F G H I J K L M N O P Q R S T U V W X
A004	.063	30	BC12	4.8	.111	.034	.003C	.306	53%	A C H I J K L M N O P Q R S T U W X
C118A	.209	300	B13	3.6	.105	.C37	.CC30	.352	17%	H I J K L M N O P Q R S T U V W X
C070B	.206	45	D11	5.9	.106	.C38	.0032	.358	18%	G H I J K L M N O P Q R S T U V W X

FLAW SENSITIVITY EVALUATION (CONT)

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B017	.212	130	FG10	4.8	.123	.C33	.0032	.268	15%	H I J K L M N O P Q R S T U V W X
C006A	.059	55	BC10	4.8	.15C	.C28	.0C33	.187	47%	A B C D H I K O P T U
B006	.211	32	BC3	3.6	.124	.034	.0033	.274	16%	K L M O P Q R S T U V W X
B005	.213	32	BC4	2.4	.121	.035	.0033	.289	16%	H I J K M P Q R S T U V W X
C084A	.210	45	A11	5.9	.105	.C41	.0034	.390	19%	D E H I J K L M N O P Q R S T U V W X
C086A	.206	35	C7	1.2	.108	.041	.0035	.380	19%	H I J K L M N O P R S T U V W X
A018	.061	130	CD2	4.8	.123	.C36	.0035	.293	59%	A D I L M N O P Q R S T U V W X
B012	.221	60	BC14	2.4	.124	.038	.0037	.306	17%	H I J K L M N P Q R S U V W X
C117A	.208	220	BC15	1.2	.119	.C40	.0037	.336	19%	E F G H I J K M N O P Q R S T U V W X
C065A	.196	50	BC10	4.8	.119	.C4C	.0037	.336	20%	G H I J K L M N O P Q R S T U V W X
C116A	.207	180	D11	5.9	.117	.C41	.0038	.350	19%	H I K L N O P Q R S T U V W X
C069A	.209	50	E11	5.9	.115	.C42	.0038	.365	20%	H I J K L M N O P Q R S T U V W X
C080A	.206	35	D15	1.2	.117	.042	.0039	.359	20%	H I J K L M N O P Q R S T U V W X
B018	.210	130	BC4	2.4	.134	.037	.0C39	.276	17%	J K M O P S T U V W X
C064A	.209	60	F10	4.8	.125	.040	.0C39	.320	19%	F G H I J K L N O P Q R S T U V W X
A006	.062	32	FG3	3.6	.129	.040	.0041	.310	64%	A C G H I J K M N O P Q R S U V W X
C116A	.207	180	B14	2.4	.124	.044	.0043	.355	21%	E H I J K L M N O P Q R T U V W X
C068A	.209	45	C12	4.8	.122	.046	.0044	.377	22%	H I J K L M N O P R S T U V W X
C080A	.206	35	D12	4.8	.124	.046	.0045	.371	22%	H I J K L M N O P Q R S T U V W X
C100A	.208	205	B14	2.4	.131	.045	.0046	.344	21%	F G H I J K L M N O P R S U V W X
C001A	.052	085	D11	5.9	.242	.025	.0047	.103	48%	A B C E F G H I J K L M O P Q R T U W X
B010	.224	60	EF4	2.4	.135	.C45	.0048	.333	20%	H I K M N P Q R S T U V W X
B012	.221	60	EF11	5.9	.143	.C43	.0048	.301	19%	H I J K L M P Q R S T U V W X
B017	.212	130	CD14	2.4	.143	.043	.0048	.301	20%	G J K M P Q R S T U X
C074B	.208	45	E8	2.4	.129	.C49	.0050	.380	23%	H I J K L M N P Q R S T U W X
C069A	.209	50	E9	3.6	.131	.C49	.0050	.374	23%	H I J K L M N O P R S T U V W X
C108A	.209	150	D8	2.4	.134	.C48	.0050	.358	22%	H I J K L M N O P Q R S T U V W X
C070A	.206	45	EF15	1.2	.134	.049	.0052	.366	23%	F G H I J K L M N O P Q R S T U V W X
B010	.224	60	FG13	3.6	.137	.048	.0052	.350	21%	H I J K L M N P Q R S T U V W X
C080A	.206	35	DE7	1.2	.129	.051	.0052	.395	24%	H I J K L M N O P Q R S T U V W X
C118A	.209	300	D8	2.4	.132	.C5C	.0052	.379	23%	H I J K L M N O P Q R S T U V W X
C084A	.210	45	EF13	3.6	.136	.C49	.0052	.360	23%	D H I J K L M N O P Q R S T U V W X
C081A	.208	40	F14	2.4	.135	.C5C	.0053	.370	24%	H I J K L M O P R S T U V W X
C086A	.206	35	DE15	1.2	.138	.05C	.0054	.362	24%	H I J K L M N O P R S T U V W X
C097A	.210	145	D10	4.8	.126	.057	.0056	.452	27%	F G H I J K L M N O P Q S T U V W X
B011	.224	60	DE10	4.8	.144	.05C	.0057	.347	22%	E F G H I J K L M N O P Q R S T U V W X
C102A	.211	300	E13	3.6	.136	.053	.0057	.390	25%	D E F H I K L M N O P Q R S T U V W X
C101A	.210	300	F8	2.4	.14C	.052	.0057	.371	24%	D F H I J K L M N O P Q R S T U V W X
B016	.225	130	DE9	3.6	.14C	.053	.0058	.379	23%	H I J K M O P Q R S T U V X
C016A	.059	50	E9	3.6	.248	.C3C	.0058	.121	50%	A B C D E F G H I J K L M N O P Q R S T U V W X
C117B	.208	220	F9	3.6	.129	.058	.0059	.450	27%	E F G H I J K L M N O P Q R T U W X
B003	.223	32	DE9	3.6	.144	.052	.0059	.361	23%	G H J K L N O P S T U
B002	.225	32	BC10	4.8	.145	.C53	.0C60	.366	23%	H I J K L N O P Q R S T U V W X
A012	.056	60	DE11	5.9	.296	.026	.0060	.088	46%	A B C D E G H I J K M N O P Q R S T U W X
C022B	.057	55	D14	2.4	.241	.C32	.0061	.133	56%	A B D E F G H I J K L M N O P Q R S T U V W X
C106A	.209	160	BC6	0.0	.312	.025	.0C61	.080	11%	F H I J K L M N O P Q R S T U V W X
C016A	.059	50	DE5	1.2	.253	.C31	.0062	.123	52%	A B C D E F G H I J K L M N O P Q R S T U V W X
C085A	.209	45	C15	1.2	.146	.054	.0062	.370	25%	H I J K L M N O P Q R S T U V W X
B021	.227	230	DE9	3.6	.144	.055	.0062	.382	24%	H I J K L M N O P S T U V W X
C031A	.060	150	E6	0.0	.249	.032	.0063	.129	53%	A D E F G H I J K L M N O P Q R S T U V W X
C102A	.211	300	C8	2.4	.141	.057	.0063	.404	27%	F H I J K L M N O P Q R S T U W X
B015	.225	125	BC10	4.8	.149	.054	.0063	.362	23%	H I J K N O P Q R S T U V W X
C031A	.060	150	B14	2.4	.249	.033	.0065	.133	54%	A B C D E F G H I J K L M N O P Q R S T U V W X
C064A	.209	60	B13	3.6	.153	.C54	.0065	.353	25%	F G H I J K L M N O P Q R S T U V W X
C016A	.059	50	DE13	3.6	.257	.033	.0067	.128	55%	A B C D E F G H I J K L M N O P Q R S T U V W X
C022A	.057	55	C10	4.8	.258	.C33	.0067	.128	57%	A B C D E F G H I J K L M N O P Q R S T U V W X
C043A	.057	160	E9	3.6	.260	.C33	.0067	.127	57%	A B C D E F G H I J K L M N O P Q R S T U V W X
C046B	.060	150	E10	4.8	.261	.033	.0068	.126	54%	A B C D E F G H I J K L M N O P Q R S T U V W X
C103A	.208	140	D11	5.9	.148	.C60	.0070	.405	28%	E F G H I K L M N O P R S T U V W X
C005A	.061	45	C6	0.0	.247	.C36	.0070	.146	59%	A B C D E F G H I J K L M N O P Q R S T U V W X

FLAW SENSITIVITY EVALUATION (CONT)

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C109A	.208	160	BC10	4.8	.151	.059	.0070	.351	28%	E F G H I J K L M N O P Q R S T U V W X
C043A	.057	160	DE5	1.2	.256	.035	.0070	.137	61%	A B C D E F G H I J K L M N O P Q R S T U V W X
C056A	.207	40	D6	0.0	.290	.031	.0071	.107	14%	B E F G H I J K L M N O P Q R T U V W X
C046A	.060	150	C6	0.0	.257	.035	.0071	.136	58%	A B C D E F G H I J K L M N O P Q R S T U V W X
C078A	.207	40	C7	1.2	.250	.036	.0071	.144	17%	B E F H I J K L M N O P Q R S T U V W X
C074B	.208	45	DE11	5.9	.158	.057	.0071	.361	27%	F H I J K L M N O P Q R S T U V W X
C005A	.061	45	C10	4.8	.258	.035	.0071	.136	57%	A B C D E F G H I J K L M N O P Q R S T U V W X
C043A	.057	160	DE13	3.6	.258	.035	.0071	.136	61%	A B C D E F G H I J K L M N O P Q R S T U V W X
C008A	.058	50	D6	0.0	.259	.035	.0071	.135	60%	A B C D E F G H I J K L M N O P Q R S T U V W X
C029A	.059	120	D10	4.8	.252	.036	.0071	.143	61%	A B C D E F G H I J K L M N O P Q R S T U V W X
B023	.227	230	EF14	2.4	.157	.058	.0071	.369	25%	H I J K M N O P Q R S T U V W X
C094A	.210	140	D12	4.8	.153	.060	.0072	.392	28%	F G H I J K L M N O P R S T U V W X
C008A	.058	50	C14	2.4	.275	.034	.0073	.124	58%	A B C D E F G H I J K L M N O P Q R S T U V W X
C035A	.061	220	D9	3.6	.268	.035	.0074	.131	57%	A B D E F G H I J K L M N O P Q R S T U V W X
C046A	.060	150	C14	2.4	.261	.037	.0076	.142	61%	A B C D E F G H I J K L M N O P Q R S T U V W X
C049A	.061	200	DE14	2.4	.262	.037	.0076	.141	60%	A B C D E F G H I J K L M N O P Q R S T U V W X
A016	.058	125	DE7	1.2	.288	.034	.0077	.118	58%	A B C D E F G H I J K L M N O P Q R S T U V W X
C085B	.209	45	E8	2.4	.153	.064	.0077	.418	30%	D G H I J K L O P Q R S T U V W X
C094A	.210	140	D14	2.4	.162	.063	.0060	.389	30%	F G H I J K L M N O P S T U V W X
C092B	.209	160	C7	1.2	.301	.034	.0080	.113	16%	E F G H I J K L M N O P Q R S T U V W X
C049A	.061	200	CD6	0.0	.279	.037	.0081	.133	60%	A B C E F G H I J K L M N O P Q R S T U V W X
A016	.058	125	EF10	4.8	.290	.036	.0082	.124	62%	A B C D E F G H I J K L M N O P Q R S T U W X
C001B	.052	085	D18	2.4	.269	.039	.0082	.145	75%	A B C D E F G H I J K L M N O P Q R S T U V W X
C058A	.208	40	DE15	1.2	.310	.034	.0083	.110	16%	D F I J K L M N O P Q R S T U V W X
C001B	.052	085	D6	0.0	.279	.038	.0083	.136	73%	A B E F G H I J K L M N O P Q R S T U V W X
C005B	.061	45	E14	2.4	.247	.043	.0083	.174	70%	A B C D E F G H I J K L M N O P Q R S T U V W X
A004	.063	30	DE9	3.6	.340	.032	.0085	.094	50%	A B C D H I J K O P T U
C022B	.057	55	C6	0.0	.287	.038	.0086	.132	66%	A B C D E F G H I J K L M N O P Q R S T U V W X
C107A	.210	140	EF7	1.2	.304	.036	.0086	.118	17%	E H I J K L M N O P Q R S T U V W X
C092B	.209	160	D14	2.4	.298	.037	.0087	.124	17%	E F G H I J K L M N O P Q R S T U V W X
A003	.054	32	BC8	2.4	.318	.036	.0090	.113	66%	A B C D E F G H I J K L M N O P Q R S T U V W X
C111A	.209	100	BC14	2.4	.171	.067	.0090	.392	32%	E F G H I J K L M N O P Q R S T U V W X
B023	.227	230	DE10	4.8	.190	.064	.0095	.337	28%	H I J K M N O P Q R S T U V W X
A012	.056	60	CD7	1.2	.340	.036	.0096	.106	64%	A B C D G H I J K M N O P Q R S T U V W X
C106A	.209	160	F10	4.8	.306	.040	.0096	.131	19%	A B E F G H I J K L M N P Q R S T U W X
C117B	.208	220	E13	3.6	.183	.068	.0098	.372	32%	E F G H I J K L M N P Q R S T U W X
C077A	.206	45	E8	2.4	.182	.071	.0101	.390	34%	H I J K L M N O P Q R S T U V W X
A024	.057	230	CD12	4.8	.334	.040	.0105	.120	70%	A B C D H I J K M N O P Q R T U V W X
C110A	.209	145	B14	2.4	.185	.074	.0107	.400	35%	A E F G H I J K L M N O P Q R S T U W X
C096A	.207	180	BC6	0.0	.313	.044	.0108	.141	21%	A E F G H I J K L M N O P Q S T U V W X
C092A	.209	160	E10	4.8	.295	.047	.0109	.159	22%	F G H I J K L M N O P Q R S T U V W X
C008B	.058	50	C10	4.8	.342	.041	.0110	.120	70%	A B C D E F G H I J K L M N O P Q R S T U V W X
C095A	.208	190	C10	4.8	.322	.044	.0111	.137	21%	A B D F H I J K L M N O P Q S T U W X
C057A	.208	35	DE14	2.4	.323	.044	.0112	.136	21%	E F G H I J K L M N O P Q R S T U V W X
C106A	.209	160	BC14	2.4	.331	.043	.0112	.130	20%	E F G H I J K L M N O P Q R S T U V W X
A018	.061	130	CD12	4.8	.326	.044	.0113	.135	72%	A B C D E G I J K L M N O P Q R S T U V W X
C058A	.208	40	EF11	5.9	.331	.044	.0114	.133	21%	E F G H I J K L M N O P Q R S T U V W X
A024	.057	230	DE9	3.6	.352	.042	.0116	.119	73%	A B C D G H I J K M N O P Q R S T U V W X
A011	.062	60	EF6	0.0	.352	.042	.0116	.119	67%	A B C D E F G H I J K L M N O P Q R S T U V W X
A014	.064	125	CD14	2.4	.342	.044	.0118	.129	68%	A B C D E F G H I K L M N P Q R S T U V W X
C088A	.197	150	EF15	1.2	.310	.049	.0119	.158	24%	E F G H I K L M N O P Q R S T U V W X
C058A	.208	40	E7	1.2	.326	.048	.0123	.147	23%	F H I J K L M N O P Q R S T U V W X
A011	.062	60	CD9	3.6	.362	.044	.0125	.122	70%	A B C D E F G H I J K L M N O P Q R S T U V W X
C075B	.210	55	EF15	1.2	.317	.051	.0127	.161	24%	H I J K L M O P Q R S T U V W X
C059A	.208	035	C14	2.4	.318	.052	.0130	.164	25%	A B F H I J K L M N O P Q R S T U V W X
A010	.060	60	CD8	2.4	.362	.046	.0131	.127	76%	A B C D E H I J K L M N O P Q R S T U V W X
C095A	.208	190	BC14	2.4	.328	.051	.0131	.155	24%	H I J K L M N O P Q R S T U V W X
C059B	.208	035	E10	4.8	.313	.054	.0133	.173	25%	E F G H I J K L M N O P Q R S T U V W X
C075B	.210	55	C7	1.2	.321	.053	.0134	.165	25%	A B H I J K L M O P Q R S T U V W X
A006	.062	32	CD6	0.0	.370	.046	.0134	.124	74%	A B C D E F G H I J K M N O P Q R S T U V W X

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FLAW SENSITIVITY EVALUATION (CONT)

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A023	.059	230	CD10	4.8	.372	.C46	.0134	.124	77%	A B C D H I J K O P T U
A018	.061	130	CD9	3.6	.372	.046	.0134	.124	75%	A B C D F G I J K L M N O P Q R S T U V W X
C088A	.197	150	E11	5.9	.329	.C53	.0137	.161	26%	F G H I J K L M N O P Q R S T U V W X
C057A	.208	35	E6	0.0	.330	.C53	.0137	.161	25%	A D E F G H I J K L M N O P Q R S T U V W X
A005	.063	32	CD11	5.9	.384	.C46	.0139	.120	73%	A B C D F G H I J K L M N O P Q R S T U V W X
A006	.062	32	DE11	5.9	.37C	.048	.0139	.130	77%	A B C D F G H I J K M N O P Q R S T U V W X
C057A	.208	35	EF10	4.8	.362	.C5C	.0142	.138	24%	F H I J K L M N O P Q R S T U V W X
A022	.061	230	EF7	1.2	.356	.C54	.0151	.152	88%	A B C D E F G H I J K L M N O P Q R S T U V W X
C059A	.208	035	D6	0.0	.345	.C57	.0154	.165	27%	A B C D E F G H I J K L M N O P Q R S T U V W X
C056A	.207	40	D14	2.4	.336	.C59	.0156	.176	28%	B F G H I J K L M N O P Q R T U V W X
C095A	.208	190	E6	0.0	.338	.C60	.0159	.178	28%	A B H I J K M O P Q S T U X
C096A	.207	180	E10	4.8	.347	.C59	.0161	.170	28%	A E F G H I J K L M N O P Q S T U V W X
C063A	.212	30	C10	4.8	.333	.C63	.0165	.189	29%	D E F G H I J K L M N O P Q R S T U V W X
C114A	.208	250	BC15	1.2	.342	.062	.0166	.181	29%	A B C D E F G H I J K L M N O P Q R S T U V W X
C063A	.212	30	D14	2.4	.340	.063	.0168	.185	29%	A B C E F G H I J K L M N O P Q R S T U V W X
B017	.212	130	EF5	1.2	.426	.C54	.0181	.127	25%	H I J K L M N O P Q R S T U V W X
C056B	.207	40	D10	4.8	.408	.C58	.0186	.142	28%	B E F G H I J K L M N P Q R S T U V W X
B005	.213	32	CD9	3.6	.442	.056	.0194	.127	26%	A B C D E G H I J K M N O P Q R S T U V X
C063A	.212	30	DE6	0.0	.381	.C76	.0227	.199	35%	A B D F G H I J K L M N O P Q R S T U V W X
B009	.223	60	CD8	2.4	.460	.064	.0231	.139	28%	A B C D G H I J K L M N O P Q R S T U V W X
C096A	.207	180	B14	2.4	.393	.C77	.0238	.196	37%	A B C D E F G H I J K M N O P Q R S T U V W X
C079A	.211	55	BC12	4.8	.283	.1C9	.0242	.385	51%	E H I J K L M N O P Q R S T U V X
C072A	.207	50	E6	0.0	.326	.1C5	.0269	.322	50%	A E F G H I J K L M N O P Q R S T U V W X
B022	.212	230	CD4	2.4	.444	.080	.0279	.180	37%	A B C D H I J K L M N O P Q R S T U V W X
B009	.223	60	EF10	4.8	.478	.C80	.0300	.167	35%	A B C D E F G H I J K L M N O P Q R S T U V W X
B018	.210	130	BC7	1.2	.458	.C84	.0302	.183	39%	A B C D H I J K L M N O P Q R S T U V W X
B020	.226	230	EF7	1.2	.478	.C86	.0323	.180	38%	A B C D E G H I J K L M N O P Q R S T U V W X
B018	.210	130	FG9	3.6	.458	.C90	.0324	.197	42%	A B C D E G H I J K L M N O P Q R S T U V X
B018	.210	130	CD16	0.0	.498	.C88	.0344	.177	41%	A B D H I J K L M P Q R S T U V W X
B022	.212	230	FG8	2.4	.466	.096	.0351	.206	45%	A B C D E F G H I J K L M N O P Q R S T U V W X
B023	.227	230	BC11	5.9	.47C	.C98	.0362	.209	43%	A B C D E H I J K M N O P Q R S T U V W X
B024	.211	230	BC13	3.6	.512	.09C	.0362	.176	42%	A B C D E F G H I J K L M N O P Q R S T U V W X
B005	.213	32	DE13	3.6	.506	.092	.0365	.182	43%	A B C D H I J K L M N O P Q R S T U V X
B006	.211	32	EF5	1.2	.508	.092	.0367	.181	43%	A B C D E F H I J K L M N O P Q R S T U V W X
B024	.211	230	EF10	4.8	.504	.094	.0372	.187	44%	A B C D E H I J K L M N O P Q R S T U V W X
B022	.212	230	BC13	3.6	.506	.094	.0373	.186	44%	A B C D F G H I J K L M N O P Q R S T U V W X
B004	.211	32	DE9	3.6	.510	.C94	.0376	.184	44%	A B C D E F H I J K L M N O P Q R S T U V W X
C071A	.206	35	B7	1.2	.495	.C97	.0377	.196	47%	A B C D E F G H I J K L M N O P Q R S T U V W X
B006	.211	32	FG13	3.6	.524	.C92	.0378	.176	43%	A B C D G H I J K L M N O P Q R S T U V X
C066A	.206	50	E7	1.2	.459	.1C7	.0386	.233	51%	A B D E F G H I J K L M N O P Q R S T U V W X
C071A	.206	35	D15	1.2	.518	.C96	.0390	.185	46%	A B C E F G H I J K L M N O P Q R S T U V W X
C105B	.209	140	D11	5.9	.466	.1C9	.0399	.234	52%	A B C D E F G H I J K L M N O P Q R S T U V W X
C060B	.209	60	E10	4.8	.475	.1C8	.0403	.227	51%	E F G H I J K L M N P Q R S T U V W X
C091B	.205	145	BC11	5.9	.50C	.1C3	.0404	.206	50%	A B D E F G H I J K L M N O P Q S T U V W X
C066B	.206	50	D11	5.9	.485	.1C7	.0411	.219	51%	A B D E F G H I J K L M N O P Q R S T U V W X
C078A	.207	40	D15	1.2	.494	.1C6	.0411	.215	51%	A B C D E F G H I J K L M N O P Q R S T U V W X
C093B	.208	150	D11	5.9	.492	.1C7	.0413	.217	51%	C D E F G H I J K L M N O P S T U W X
B011	.224	60	EF13	3.6	.512	.1C4	.0418	.203	46%	A B C D H I J K M N O P Q R S T U W X
C105A	.209	140	D15	1.2	.495	.1C8	.0420	.218	51%	A B C D F G H I J K L M N O P Q R S T U V W X
C076A	.211	50	B11	5.9	.484	.111	.0422	.229	52%	A B D E F G H I J K L M N O P Q R S T U V W X
B017	.212	130	CD8	2.4	.474	.114	.0424	.241	53%	A B C D E F G H I J K M N O P Q R S T U V W X
C107A	.210	140	D11	5.9	.503	.1C9	.0430	.217	51%	A B C D E F G H I J K L M N O P Q R S T U V W X
B016	.225	130	DE12	4.8	.520	.1C6	.0433	.204	47%	A B C D E F G H I J K L M N O P Q R S T U V W X
B003	.223	32	BC11	5.9	.526	.1C6	.0438	.202	47%	A B C D F H I J K L M N O P Q R S T U V X
C066A	.206	50	C15	1.2	.508	.11C	.0439	.217	53%	A B C D E F G H I J K L M N O P Q R S T U V W X
C104B	.210	280	BC11	5.9	.513	.1C9	.0439	.212	51%	D E F G H I J K L M N O P Q R S T U V W X
B012	.221	60	DE9	3.6	.530	.1C6	.0441	.200	47%	A B C D E F G H I J K L M N O P Q R S T U V W X
B014	.221	130	DE7	1.2	.522	.1C8	.0443	.207	48%	A B C D E F G H I J K L M N O P Q R S T U V W X
B016	.225	130	CD4	2.4	.534	.1C6	.0444	.199	47%	A B C D E F G H I J K L M N O P Q R S T U V W X
C112A	.207	175	D10	4.8	.520	.1C9	.0445	.210	52%	A D E F G H I J K L M N O P Q R S T U V W X

FLAW SENSITIVITY EVALUATION (CONT)

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C113A	.210	280	BC10	4.8	.499	.114	.0447	.228	54%	D E F G H I J K L M N O P Q R S T U W X
C113A	.210	280	BC6	0.0	.514	.111	.0448	.216	52%	A B C D E F G H I J K L M N O P Q R S T U W X
C060A	.209	60	C14	2.4	.519	.110	.0448	.212	52%	A B D E F G H I J K L M N O P Q R S T U V W X
B011	.224	60	CD5	1.2	.530	.108	.0449	.204	48%	A B C D E F G H I J K L M N O P Q R S T U V W X
B011	.224	60	BC11	5.9	.496	.116	.0452	.234	51%	A B C D H I J K L M N O P Q R S T U V W X
B012	.221	60	CD3	3.6	.534	.108	.0453	.202	48%	A B C D G H I J K L M N O P Q R S T U V W X
C112A	.207	175	F6	0.0	.521	.112	.0458	.215	54%	A B C D E F G H I J K L M N O P Q R S T U V W X
B024	.211	230	DE6	0.0	.472	.124	.0459	.263	58%	A B C D E F G H I J K M N O P Q R S T U V W X
B023	.227	230	DE5	1.2	.534	.110	.0461	.206	48%	A B C D G H I J K M N O P Q R S T U V W X
B008	.226	60	DE7	1.2	.520	.114	.0465	.219	50%	A B C D E F G H I J K L M N O P Q R S T U V W X
C072B	.207	50	E14	2.4	.523	.114	.0468	.218	55%	A B C D E F G H I J K L M N O P Q R S T U V W X
B012	.221	60	EF6	0.0	.478	.126	.0473	.264	57%	A B C D E F G H I J K L M N O P Q R S T U V W X
B021	.227	230	FG6	0.0	.538	.112	.0473	.208	49%	A B C D E F G H I J K L M N O P Q R S T U V W X
B010	.224	60	CD8	2.4	.550	.110	.0475	.200	49%	A B C D E F G H I J K M N O P Q R S T U V W X
C113A	.210	280	E14	2.4	.509	.119	.0475	.234	56%	A B C D E F G H I J K L M N O P Q R S T U W X
B006	.211	32	EF9	3.6	.474	.128	.0476	.270	60%	A B C D E F G H I J K L M N O P Q R S T U X
C060A	.209	60	C6	0.0	.535	.114	.0479	.213	54%	A B C D E F G H I J K L M N O P Q R S T U V W X
B004	.211	32	DE5	1.2	.478	.128	.0480	.268	60%	A B C D E F G H I J K L M N O P Q R S T U V W X
C062B	.210	40	E11	5.9	.539	.115	.0487	.213	54%	A B D E F G H I J K L M N O P Q R S T U V W X
C093A	.208	150	D7	1.2	.535	.116	.0487	.217	55%	A B C D E F G H I J K L M N O P S T U W X
C105A	.209	140	C7	1.2	.543	.116	.0494	.214	55%	A B C D E F G H I J K L M N O P Q R S T U V W X
B006	.211	32	CD7	1.2	.492	.130	.0502	.264	61%	A B C D E F G H I J K L M N O P Q R S T U V W X
C087A	.209	160	BC6	0.0	.559	.115	.0505	.206	55%	A B C D E F G H I J K L M N O P Q R S T U V W X
B005	.213	32	EF7	1.2	.482	.136	.0515	.282	63%	A B C D E F G H I J K L M N O P Q R S T U V X
C072A	.207	50	E10	4.8	.568	.117	.0522	.206	56%	A B E F G H I J K L M N O P Q R S T U V W X
B015	.225	125	EF7	1.2	.490	.144	.0554	.294	63%	A B C D E F G H I J K M N O P Q R S T U V W
C093A	.208	150	E15	1.2	.610	.126	.0603	.207	60%	A B C D E F G H I J K L M N O P S T U V W X
C074B	.208	45	BC7	1.2	.496	.178	.0693	.359	85%	A B C D E F H I K L M N O P Q R S T U V W X
C087A	.209	160	BC14	2.4	.710	.126	.0702	.177	60%	A B C D E F G H I J K L M N O P Q R S T U V W X
C104A	.210	280	D15	1.2	.979	.149	.1145	.152	70%	A B C D E F G H I J K L M N O P Q R S T U V W X

APPENDIX B.

POISSON NUMBERS

In order to analyze for a flaw sensitivity limit, given an established test confidence (z) and probability of detection (p), it is necessary to determine the sample size (N) as a function of the number of failures (X). This was done by a computer program that first evaluated the normal approximation to the binominal distribution, then iterated a solution to the equation

$$\sum_{j=o}^{X} \frac{\left[(1-p) \cdot N\right]^{j} \cdot e^{-(1-p) \cdot N}}{j\,!} = 1 - z$$

which gives the Poisson approximation to the binominal distribution.

```
0001            REAL*8    ZA(07),PA(08) ,SROUT Z (07)
0002            REAL*8    Z (07),PO(08),X (37) ,A,B,C,SUM,SUMA,FAC
0003            REAL*8 N(2),NIH,NIL   , ZI(7), ZZI (7)  ,ZZ   (7)
0004            DATA ZI/ 0.8000, 0.8500, 0.9000, 0.9500,
               * 0.9600, 0.9700, 0.9750 /
0005            DATA ZZI / 0.842, 1.036, 1.282, 1.645,
               * 1.751, 1.881, 1.960 /
0006            DATA PO/0.875,0.90,0.925,0.95,0.96,0.97,0.98,0.99/
0007            DATA Z/0.80,0.85,0.90,0.95,0.96,0.97,0.975/
0008            DO 10 I=1,37
0009         10 X(I)=FLOAT(I-1)
0010            DO 40 K=1,7
0011            DO 30 J=1,8
0012            DO 25 M=1,7
0013            IF(Z(K).EQ.ZI(M)) GO TO 35
0014         25 CONTINUE
0015            ZZ(K)=ZZI(1)
0016            GO TO 41
0017         35 ZZ(K)  =  ZZI (M)
0018         41 WRITE(6,80)
0019         80 FORMAT ('1')
0020            WRITE(6,100) Z(K),PO(J)
0021        100 FORMAT (4X,4H Z=  ,F4.3,4H P= ,F4.3)
0022            PA(J)=1.0-PO(J)
0023            DO 20  I=1,37
0024            IC=I-1
0025            A=PA(J)**2
0026            B= (2.0*PA(J)*X(I))+((ZZ(K)**2)*PA(J)*(1.0-PA(J)))
0027            C=X(I)**2
0028            NIH=(B+(D SQRT((B**2)-(4.0*A*C))))/(2.0*A)
0029         60 FAC=1.0
0030            SUM=DEXP(-1.0*NIH*PA(J))
0031            IF(I.EQ.1) GO TO 57
0032            DO 50 L=1,IC
0033            FAC= FAC*L
0034            SUM=SUM+(((NIH*PA(J))**(L   ))*DEXP( -1.0*  (NIH*PA(J))))  /  FAC
0035         50 CONTINUE
0036         57 SUMA=1.0-SUM
0037            IF(SUMA.GT.Z(K))  GO TO 55
0038            NIH  =  NIH  +  1.0
0039            GO TO 60
0040         55 NIH = NIH - 0.1
0041            SUM=DEXP(-1.0*NIH*PA(J))
0042            FAC =1.0
0043            IF(I.EQ.1) GO TO 58
0044            DO 70 L=1,IC
0045            FAC=FAC*L
0046            IF ( NIH*PA(J)   .GT.   170  )  GO TO 20
0047            SUM=SUM+(((NIH*PA(J))**(L   ))*DEXP( -1.0*  (NIH*PA(J))))  /  FAC
0048         70 CONTINUE
0049         58 SUMA=1.0-SUM
0050            IF(SUMA.LT.Z(K))  GO TO 75
0051            GO TO 55
0052         75 NIH=NIH+0.01
0053         76 FAC=1.0
0054            SUM=DEXP(-1.0*NIH*PA(J))
0055            IF(I.EQ.1) GO TO 59
0056            DO 82 L=1,IC
0057            FAC=FAC*L
0058            SUM=SUM+(((NIH*PA(J))**(L   ))*DEXP( -1.0*  (NIH*PA(J))))  /  FAC
0059         82 CONTINUE
0060         59 SUMA=1.0-SUM
0061            IF(SUMA.GT.Z(K))  GO TO 122
0062            GO TO 75
0063        122 N(1)=NIH
0064            WRITE(6,120)IC,N(1)
0065        120 FORMAT(2X,7H X(I)= ,I2,3X,4H N= ,F7.2)
0066         20 CONTINUE
0067         30 CONTINUE
0068         40 CONTINUE
0069            STOP
0070            END
```


Space Division
Rockwell International

X(I)	Z= .975 P= .990 N	Z= .975 P= .980 N	Z= .975 P= .970 N	Z= .975 P= .960 N	Z= .975 P= .950 N	Z= .975 P= .925 N
0	268.89	184.45	122.97	92.23	73.76	49.19
1	557.17	276.59	185.73	139.30	111.44	74.29
2	722.48	361.24	240.65	180.63	144.50	96.33
3	876.73	436.37	292.25	219.19	175.35	116.90
4	1024.15	512.08	341.23	256.04	204.84	136.56
5	1166.84	585.42	388.95	291.71	233.37	155.59
6	1305.95	652.94	435.35	326.49	261.20	174.13
7	1442.27	721.14	480.76	360.57	288.46	192.31
8	1576.32	788.16	525.43	394.08	315.27	210.16
9	1708.49	854.25	569.50	427.13	341.70	227.81
10	1839.04	919.52	613.01	459.76	367.81	245.21
11	1968.22	984.11	656.09	492.06	393.65	262.43
12	2096.17	1048.08	698.73	524.04	419.24	279.49
13	2223.05	1111.52	741.02	555.76	444.62	296.41
14	2348.97	1174.49	782.99	587.25	469.80	313.20
15	2474.03	1237.02	824.69	618.51	494.81	329.88
16	2598.31	1299.15	866.11	649.58	519.66	346.44
17	2721.67	1360.94	907.29	680.47	544.38	362.92
18	2844.78	1422.39	948.27	711.20	568.96	379.31
19	2967.09	1483.55	989.03	741.78	593.42	395.61
20	3088.65	1544.43	1029.62	772.21	617.77	411.85
21	3210.08	1605.04	1070.03	802.53	642.02	428.01
22	3330.83	1665.42	1110.26	832.72	666.17	444.12
23	3451.14	1725.57	1150.38	862.79	690.23	460.15
24	3571.02	1785.52	1190.35	892.75	714.21	476.14
25	3690.50	1845.25	1230.17	922.63	738.11	492.07
26	3809.61	1904.81	1269.87	952.41	761.92	507.95
27	3928.37	1964.19	1309.46	982.09	785.67	523.78
28	4046.79	2023.39	1348.93	1011.70	809.36	539.57
29	4164.89	2082.45	1388.30	1041.23	832.98	555.33
30	4282.69	2141.35	1427.56	1070.66	856.54	571.03
31	4400.21	2200.11	1466.74	1100.05	880.04	586.70
32	4517.46	2258.73	1505.82	1129.37	903.50	602.33
33	4634.44	2317.22	1544.82	1158.61	926.89	617.93
34	4751.17	2375.59	1583.72	1187.79	950.24	633.49
35	4867.66	2433.84	1622.56	1216.92	973.53	649.03
36	4983.93	2491.96	1661.32	1245.98	996.79	664.52

X(I)	Z= .975 P= .900 N	Z= .975 P= .875 N	Z= .975 P= .850 N	Z= .975 P= .800 N	Z= .975 P= .750 N	Z= .975 P= .700 N
0	36.89	29.51	24.60	18.45	14.76	12.30
1	55.73	44.57	37.15	27.86	22.29	18.57
2	72.26	57.80	48.16	36.13	28.90	24.08
3	87.68	70.14	58.45	43.84	35.08	29.23
4	102.42	81.93	68.28	51.21	40.97	34.14
5	116.69	93.35	77.79	58.35	46.68	38.90
6	130.60	104.48	87.07	65.31	52.24	43.54
7	144.23	115.38	96.15	72.11	57.70	48.08
8	157.64	126.12	105.10	78.82	63.06	52.55
9	170.86	136.69	113.91	85.43	68.34	56.95
10	183.91	147.13	122.61	91.96	73.56	61.30
11	196.82	157.47	131.22	98.41	78.74	65.61
12	209.62	167.69	139.75	104.81	83.85	69.88
13	222.31	177.85	148.21	111.16	88.92	74.11
14	234.91	187.92	156.60	117.45	93.96	78.31
15	247.41	197.93	164.94	123.71	98.96	82.47
16	259.84	207.87	173.22	129.92	103.94	86.61
17	272.19	217.76	181.47	136.10	108.88	90.74
18	284.49	227.59	189.66	142.25	113.80	94.83
19	296.71	237.37	197.81	148.36	118.68	98.91
20	308.89	247.12	205.93	154.45	123.56	102.96
21	321.01	256.81	214.01	160.51	128.41	107.01
22	333.09	266.47	222.06	166.55	133.24	111.03
23	345.12	276.09	230.08	172.56	138.05	115.04
24	357.11	285.69	238.08	178.56	142.85	119.04
25	369.05	295.24	246.04	184.53	147.63	123.02
26	380.96	304.77	253.98	190.48	152.39	126.99
27	392.84	314.28	261.89	196.42	157.14	130.95
28	404.69	323.74	269.75	202.35	161.88	134.89
29	416.49	333.20	277.66	208.25	166.60	138.83
30	428.28	342.62	285.52	214.14	171.31	142.76
31	440.03	352.02	293.35	220.02	176.01	146.68
32	451.75	361.40	301.17	225.88	180.70	150.58
33	463.45	370.76	308.97	231.73	185.38	154.48
34	475.12	380.10	316.74	237.56	190.05	158.38
35	486.77	389.41	324.51	243.39	194.71	162.26
36	498.39	398.72	332.27	249.[illegible]	199.37	166.13

X(I)=	N= (Z= .975 P= .650)	N= (Z= .975 P= .600)	N= (Z= .970 P= .990)	N= (Z= .970 P= .980)	N= (Z= .970 P= .970)	N= (Z= .970 P= .900)
0	10.54	9.22	330.65	175.53	110.89	87.67
1	15.53	13.94	533.60	267.11	176.54	133.90
2	20.65	18.06	658.39	349.20	232.61	174.60
3	25.05	21.92	850.53	425.27	283.51	212.63
4	29.26	25.61	955.10	498.05	332.04	249.03
5	33.34	29.17	1137.10	568.55	379.04	284.28
6	37.32	32.65	1274.66	637.33	424.85	318.67
7	41.21	36.06	1409.54	704.77	469.85	352.35
8	45.04	39.42	1542.24	771.13	514.09	385.56
9	48.82	42.72	1673.12	836.56	557.71	418.29
10	52.54	45.98	1803.45	901.23	600.63	450.62
11	56.24	49.22	1930.47	965.24	643.49	482.62
12	59.89	52.41	2057.31	1028.66	685.77	514.33
13	63.52	55.58	2135.11	1091.56	727.71	545.76
14	67.12	58.73	2304.01	1154.01	769.34	577.01
15	70.65	61.85	2433.07	1216.03	810.69	608.02
16	74.24	64.96	2555.37	1277.69	851.79	638.84
17	77.77	68.05	2675.00	1339.00	892.67	669.50
18	81.28	71.12	2795.99	1400.00	933.34	699.99
19	84.78	74.18	2921.40	1460.70	973.81	730.35
20	88.25	77.23	3042.28	1521.14	1014.09	760.57
21	91.72	80.26	3162.66	1581.33	1054.23	790.67
22	95.17	83.28	3282.59	1641.30	1094.20	820.65
23	98.61	86.28	3402.07	1701.04	1134.03	850.52
24	102.03	89.28	3521.16	1760.58	1173.72	880.30
25	105.45	92.27	3639.86	1819.93	1213.29	909.97
26	108.95	95.25	3758.20	1879.10	1252.74	939.55
27	112.24	98.21	3876.20	1938.11	1292.07	969.06
28	115.62	101.17	3993.88	1996.95	1331.30	998.47
29	119.00	104.12	4111.27	2055.63	1370.43	1027.81
30	122.37	107.07	4228.35	2114.18	1409.46	1057.09
31	125.73	110.01	4345.17	2172.58	1448.39	1086.29
32	129.07	112.94	4461.71	2230.86	1487.24	1115.43
33	132.41	115.86	4578.01	2289.01	1526.00	1144.50
34	135.76	118.78	4694.07	2347.04	1564.69	1173.52
35	139.08	121.70	4809.91	2404.95	1603.30	1202.48
36	142.41	124.61	4925.51	2462.76	1641.65	1231.38

X(I)=	N= (Z= .970 P= .950)	N= (Z= .970 P= .925)	N= (Z= .970 P= .900)	N= (Z= .970 P= .875)	N= (Z= .970 P= .850)	N= (Z= .970 P= .800)
0	70.14	46.76	35.07	28.06	23.38	17.54
1	107.12	71.42	53.57	42.85	35.71	26.79
2	139.68	93.12	69.84	55.86	46.57	34.93
3	170.11	113.41	85.06	68.05	56.71	42.53
4	199.22	132.62	99.61	79.69	66.41	49.81
5	227.43	151.62	113.71	90.97	75.82	56.86
6	254.93	169.96	127.47	101.98	84.99	63.73
7	281.91	187.95	140.96	112.77	93.97	70.46
8	308.45	205.63	154.23	123.39	102.82	77.12
9	334.63	223.09	167.31	133.85	111.55	83.67
10	360.50	240.33	180.25	144.21	120.17	90.13
11	386.09	257.40	193.05	154.44	128.70	96.53
12	411.46	274.31	205.74	164.59	137.16	102.87
13	436.62	291.09	218.31	174.65	145.54	109.16
14	461.61	307.74	230.80	184.65	153.87	115.41
15	486.42	324.26	243.21	194.57	162.14	121.61
16	511.07	340.72	255.54	204.43	170.36	127.77
17	535.60	357.06	267.80	214.25	178.54	133.90
18	560.00	373.34	280.01	224.00	186.67	140.00
19	584.29	389.52	292.15	233.72	194.76	146.07
20	608.46	405.64	304.23	243.39	202.82	152.12
21	632.53	421.69	316.27	253.02	210.85	158.14
22	656.52	437.69	328.26	262.61	218.85	164.13
23	680.42	453.62	340.21	272.17	226.81	170.11
24	704.23	469.50	352.12	281.70	234.74	176.06
25	727.98	485.32	363.99	291.20	242.66	182.00
26	751.65	501.10	375.82	300.65	250.56	187.92
27	775.24	516.83	387.62	310.10	258.42	193.82
28	798.78	532.52	399.39	319.52	266.26	199.70
29	822.25	548.17	411.13	328.90	274.09	205.57
30	845.67	563.79	422.84	338.27	281.90	211.42
31	869.04	579.36	434.52	347.62	289.68	217.26
32	892.35	594.90	446.17	356.94	297.45	223.09
33	915.61	610.40	457.80	366.25	305.20	228.91
34	938.81	625.88	469.41	375.53	312.95	234.70
35	961.99	641.33	481.00	384.79	320.67	240.50
36	985.11	656.74	492.56	394.04	328.37	246.28

X(I)	Z= .970 P= .750 N	Z= .970 P= .700 N	Z= .970 P= .650 N	Z= .970 P= .600 N	Z= .960 P= .990 N	Z= .960 P= .980 N
0	14.03	11.70	10.02	8.77	321.89	150.94
1	21.43	17.86	15.31	13.39	[illegible]	250.64
2	27.94	23.28	19.96	17.47	659.90	329.95
3	34.03	28.36	24.31	21.27	808.55	404.28
4	39.85	33.21	28.46	24.91	951.04	475.52
5	45.48	37.91	32.49	28.43	1089.26	544.64
6	50.99	42.45	36.43	31.87	1224.25	612.14
7	56.39	46.95	40.29	35.24	1356.79	678.40
8	61.70	51.42	44.07	38.56	1487.26	743.63
9	66.93	55.78	47.81	41.83	1616.03	808.02
10	72.11	60.09	51.51	45.06	1743.37	871.69
11	77.22	64.36	55.17	48.26	1869.46	934.73
12	82.29	68.58	58.79	51.44	1994.46	997.24
13	87.33	72.77	62.38	54.58	2118.50	1059.25
14	92.33	76.94	65.95	57.71	2241.68	1120.84
15	97.29	81.07	69.49	60.81	2364.10	1182.05
16	102.22	85.19	73.02	63.89	2485.80	1242.90
17	107.12	89.27	76.52	66.95	2606.87	1303.44
18	112.01	93.33	80.01	70.00	2727.35	1363.68
19	116.86	97.39	83.47	73.04	2847.30	1423.65
20	121.70	101.42	86.92	76.06	2966.75	1483.38
21	126.52	105.42	90.37	79.08	3085.73	1542.67
22	131.31	109.42	93.79	82.07	3204.28	1602.14
23	136.08	113.41	97.21	85.05	3322.43	166[illegible].22
24	140.85	117.38	100.61	88.03	3440.20	1720.11
25	145.60	121.33	104.00	91.00	3557.61	1778.81
26	150.33	125.28	107.38	93.96	3674.69	1837.35
27	155.05	129.21	110.75	96.91	3791.46	1895.73
28	159.76	133.13	114.12	99.85	3907.93	1953.97
29	164.46	137.04	117.47	102.79	4024.10	2012.06
30	169.14	140.95	120.92	105.71	4140.02	2070.01
31	173.81	144.84	124.15	108.64	4255.67	2127.84
32	178.48	148.73	127.48	111.55	4371.06	2185.54
33	183.12	152.60	130.81	114.46	4486.26	2243.14
34	187.77	156.48	134.13	117.36	4601.22	2300.61
35	192.40	160.33	137.43	120.24	4715.96	2357.98
36	197.02	164.19	140.74	123.14	4830.49	2415.25

X(I)	Z= .960 P= .970 N	Z= .960 P= .960 N	Z= .960 P= .950 N	Z= .960 P= .925 N	Z= .960 P= .900 N	Z= .960 P= .875 N
0	107.30	80.47	64.38	42.92	32.19	25.75
1	167.09	125.32	100.26	66.84	50.13	40.11
2	219.97	164.97	131.99	87.99	65.99	52.79
3	269.52	202.14	161.71	107.81	80.86	64.69
4	317.02	237.76	190.21	126.81	95.11	76.09
5	363.09	272.32	217.86	145.23	108.93	87.14
6	408.09	306.08	244.86	163.24	122.43	97.94
7	452.26	339.21	271.37	180.90	135.68	108.55
8	495.75	371.82	297.46	198.31	148.74	118.98
9	538.68	404.01	323.21	215.47	161.61	129.29
10	581.13	435.85	348.68	232.45	174.34	139.47
11	623.16	467.36	373.89	249.27	186.95	149.56
12	664.83	496.62	398.89	265.94	199.45	159.56
13	706.17	529.63	423.71	282.47	211.86	169.49
14	747.23	560.43	448.34	298.89	224.17	179.34
15	786.04	591.02	472.83	315.21	236.42	189.13
16	828.60	621.45	497.16	331.45	248.58	198.87
17	868.96	651.72	521.37	347.59	260.65	208.55
18	909.12	681.84	545.47	363.65	272.74	218.19
19	949.14	711.82	569.46	379.65	284.74	227.79
20	988.92	741.69	593.35	395.57	296.68	237.35
21	1028.58	771.43	617.15	411.44	308.58	246.88
22	1068.10	801.07	640.88	427.24	320.43	256.35
23	1107.48	830.61	664.49	443.00	332.25	265.80
24	1146.73	860.05	688.04	458.70	344.03	275.22
25	1185.88	889.41	711.53	474.35	355.76	284.61
26	1224.90	918.67	734.94	489.97	367.48	293.98
27	1263.82	947.86	758.29	505.53	379.15	303.32
28	1302.64	976.98	781.59	521.06	390.79	312.64
29	1341.37	1006.03	804.82	536.55	402.41	321.94
30	1380.01	1035.01	828.01	552.01	414.00	331.21
31	1418.56	1063.92	851.14	567.43	425.57	340.46
32	1457.03	1092.77	874.22	582.81	437.11	349.69
33	1495.42	1121.57	897.26	598.17	448.63	358.90
34	1533.75	1150.31	920.25	613.50	460.13	368.11
35	1571.99	1178.99	943.19	628.79	471.60	377.28
36	1610.17	1207.62	966.10	644.07	483.06	386.44

X(I)	Z= .960 P= .850 N	Z= .960 P= .800 N	Z= .960 P= .750 N	Z= .960 P= .700 N	Z= .960 P= .650 N	Z= .960 P= .600 N
0	21.46	16.10	12.86	10.73	9.70	8.05
1	33.42	25.07	20.06	16.71	14.33	12.54
2	44.00	33.00	26.40	22.00	18.86	16.50
3	53.90	40.43	32.35	26.96	23.10	20.22
4	63.41	47.56	38.04	31.70	27.18	23.78
5	72.63	54.46	43.57	36.31	31.13	27.23
6	81.62	61.22	48.97	40.81	34.98	30.61
7	90.45	67.85	54.27	45.23	38.77	33.92
8	99.16	74.36	59.49	49.58	42.50	37.18
9	107.74	80.81	64.65	53.88	46.18	40.41
10	116.23	87.17	69.74	58.12	49.82	43.59
11	124.64	93.46	74.79	62.32	53.42	46.74
12	132.97	99.72	79.78	66.49	56.99	49.87
13	141.24	105.93	84.75	70.62	60.53	52.97
14	149.45	112.09	89.68	74.73	64.05	56.04
15	157.61	118.21	94.57	78.81	67.55	59.11
16	165.72	124.30	99.43	82.87	71.02	62.15
17	173.80	130.35	104.28	86.90	74.49	65.18
18	181.83	136.36	109.10	90.91	77.93	68.19
19	189.82	142.37	113.90	94.91	81.35	71.19
20	197.79	148.34	118.67	98.89	84.77	74.18
21	205.72	154.29	123.43	102.86	88.17	77.15
22	213.63	160.22	128.18	106.81	91.56	80.11
23	221.50	166.12	132.90	110.75	94.93	83.06
24	229.35	172.01	137.61	114.68	98.29	86.01
25	237.18	177.88	142.31	118.59	101.65	88.95
26	244.98	183.74	146.99	122.50	105.00	91.87
27	252.77	189.58	151.66	126.38	108.33	94.79
28	260.53	195.40	156.32	130.27	111.66	97.70
29	268.27	201.21	160.97	134.14	114.98	100.60
30	276.00	207.01	165.61	138.00	118.29	103.50
31	283.71	212.79	170.23	141.86	121.60	106.40
32	291.41	218.56	174.85	145.71	124.89	109.28
33	299.09	224.37	179.46	149.55	128.19	112.16
34	306.76	230.06	184.06	153.38	131.47	115.03
35	314.40	235.80	188.65	157.20	134.75	117.90
36	322.03	241.52	193.22	161.02	138.02	120.74

X(I)	Z= .950 P= .990 N	Z= .950 P= .980 N	Z= .950 P= .970 N	Z= .950 P= .960 N	Z= .950 P= .950 N	Z= .950 P= .925 N
0	299.58	149.80	99.86	74.89	59.92	39.94
1	474.39	237.20	158.13	118.60	94.89	63.26
2	629.58	314.80	209.86	157.40	125.92	83.95
3	775.38	387.68	258.46	193.65	155.08	103.38
4	915.36	457.68	305.12	228.85	183.07	122.05
5	1051.31	525.66	350.44	262.84	210.27	140.18
6	1184.25	592.12	394.75	296.07	236.85	157.91
7	1314.82	657.42	438.27	328.71	262.97	175.31
8	1443.47	721.74	481.16	360.87	288.70	192.47
9	1570.53	785.27	523.51	392.64	314.11	209.40
10	1696.23	848.12	565.41	424.06	339.25	226.16
11	1820.76	910.38	606.92	455.19	364.15	242.77
12	1944.27	972.13	648.09	486.07	388.86	259.24
13	2066.86	1033.44	688.96	516.72	413.38	275.59
14	2188.66	1094.33	729.55	547.17	437.73	291.83
15	2309.72	1154.86	769.91	577.43	461.94	307.96
16	2430.12	1215.06	810.05	607.54	486.03	324.02
17	2549.93	1274.97	849.98	637.48	509.99	340.00
18	2669.19	1334.59	889.73	667.30	533.84	355.90
19	2787.93	1393.96	929.31	696.90	557.59	371.73
20	2906.21	1453.11	968.74	726.56	581.24	387.50
21	3024.05	1512.03	1008.03	756.02	604.82	403.22
22	3141.49	1570.75	1047.17	785.36	628.31	418.87
23	3256.55	1629.28	1086.18	814.63	651.71	434.48
24	3375.25	1687.62	1125.09	843.81	675.05	450.04
25	3491.62	1745.81	1163.88	872.90	698.33	465.56
26	3607.67	1803.84	1202.56	901.92	721.54	481.02
27	3723.43	1861.71	1241.14	930.86	744.68	496.46
28	3838.90	1919.45	1279.64	959.73	767.79	511.65
29	3954.10	1977.05	1318.04	988.53	790.83	527.22
30	4069.06	2034.53	1356.35	1017.27	813.82	542.55
31	4183.77	2091.69	1394.59	1045.95	836.76	557.64
32	4298.25	2149.13	1432.76	1074.56	859.66	573.11
33	4412.52	2206.26	1470.84	1103.13	882.50	588.34
34	4526.57	2263.29	1508.86	1131.65	905.32	603.55
35	4640.42	2320.22	1546.81	1160.11	928.09	618.72
36	4754.08	2377.05	1584.70	1188.53	950.82	633.88

X(I)	Z= .950 P= .900 N	Z= .950 P= .875 N	Z= .950 P= .850 N	Z= .950 P= .800 N	Z= .950 P= .750 N	Z= .950 P= .700 N
0	29.96	23.57	19.97	14.98	11.99	5.99
1	47.44	37.95	31.63	23.73	18.95	15.82
2	62.96	50.37	41.58	31.48	25.15	20.95
3	77.54	62.03	51.69	38.78	31.02	25.95
4	91.54	73.23	61.03	45.77	36.62	30.51
5	105.14	84.11	70.09	52.57	42.06	35.05
6	118.43	94.75	78.95	59.22	47.38	39.48
7	131.48	105.19	87.66	65.74	52.59	43.83
8	144.36	115.48	96.24	72.18	57.74	48.12
9	157.05	125.65	104.70	78.54	62.83	52.36
10	169.63	135.70	113.09	84.82	67.85	56.55
11	182.08	145.65	121.39	91.04	72.84	60.69
12	194.43	155.54	129.62	97.21	77.77	64.81
13	206.69	165.35	137.80	103.34	82.68	68.90
14	218.86	175.09	145.91	109.44	87.55	72.96
15	230.97	184.78	153.95	115.49	92.39	76.99
16	243.02	194.41	162.02	121.51	97.21	81.01
17	254.99	204.00	170.00	127.50	102.00	85.00
18	266.93	213.54	177.95	133.46	106.77	88.98
19	278.79	223.04	185.87	139.40	111.52	92.94
20	290.62	232.50	193.75	145.31	116.25	96.88
21	302.41	241.93	201.61	151.21	120.97	100.81
22	314.15	251.32	209.43	157.08	125.66	104.72
23	325.85	260.63	217.24	162.94	130.35	108.62
24	337.53	270.03	225.02	168.77	135.02	112.51
25	349.16	279.34	232.78	174.58	139.67	116.40
26	360.77	288.62	240.51	180.39	144.31	120.26
27	372.35	297.87	248.23	186.18	148.95	124.12
28	383.90	307.11	255.93	191.95	153.56	127.97
29	395.41	316.34	263.62	197.71	158.17	131.81
30	406.91	325.55	271.27	203.46	162.76	135.64
31	418.39	334.70	278.92	209.19	167.36	139.47
32	429.83	343.67	286.56	214.92	171.94	143.28
33	441.26	353.01	294.17	220.63	176.50	147.09
34	452.67	362.13	301.78	226.33	181.06	150.89
35	464.04	371.24	309.37	232.03	185.62	154.69
36	475.41	380.33	316.94	237.71	190.17	158.47

X(I)	Z= .950 P= .650 N	Z= .950 P= .600 N	Z= .900 P= .990 N	Z= .900 P= .980 N	Z= .900 P= .970 N	Z= .900 P= .960 N
0	8.57	7.50	230.26	115.13	76.76	57.57
1	13.56	11.87	388.98	194.49	129.67	97.24
2	18.00	15.74	532.23	266.12	177.42	133.06
3	22.16	19.39	668.08	334.05	222.70	167.03
4	26.16	22.89	799.37	399.68	266.46	199.84
5	30.05	26.29	927.48	463.74	309.16	231.87
6	33.84	29.61	1053.21	526.61	351.07	263.31
7	37.57	32.88	1177.10	588.56	392.37	294.27
8	41.25	36.10	1299.48	649.74	433.16	324.87
9	44.88	39.27	1420.61	710.31	473.54	355.15
10	48.47	42.42	1540.67	770.34	513.56	385.17
11	52.03	45.53	1659.82	829.91	553.27	414.95
12	55.55	48.61	1778.16	888.08	592.73	444.55
13	59.06	51.67	1895.80	947.91	631.94	473.95
14	62.54	54.72	2012.81	1006.41	670.94	503.20
15	66.00	57.74	2129.25	1064.63	709.76	532.31
16	69.44	60.76	2245.16	1122.58	748.39	561.29
17	72.86	63.75	2360.61	1180.31	786.87	590.16
18	76.26	66.74	2475.64	1237.82	825.22	618.91
19	79.66	69.70	2590.26	1295.13	863.42	647.57
20	83.04	72.66	2704.51	1352.26	901.50	676.14
21	86.41	75.61	2818.43	1409.22	939.48	704.61
22	89.76	78.54	2932.03	1466.02	977.35	733.01
23	93.10	81.47	3045.34	1522.67	1015.11	761.34
24	96.44	84.39	3158.36	1579.18	1052.79	789.59
25	99.76	87.30	3271.13	1635.57	1090.38	817.79
26	103.08	90.20	3383.64	1691.83	1127.88	845.91
27	106.38	93.05	3495.93	1747.97	1165.31	873.98
28	109.69	95.95	3608.00	1804.00	1202.67	902.00
29	112.98	98.85	3719.86	1859.93	1239.96	929.97
30	116.26	101.74	3831.52	1915.76	1277.18	957.88
31	119.54	104.60	3942.99	1971.50	1314.33	985.75
32	122.81	107.46	4054.26	2027.14	1351.43	1013.57
33	126.08	110.32	4165.40	2082.70	1388.47	1041.35
34	129.33	113.16	4276.37	2138.18	1425.46	1069.10
35	132.59	116.01	4387.16	2193.58	1462.39	1096.80
36	135.83	118.86	4497.61	2248.91	1499.27	1124.46

Z= .900 P= .950 X(I)=	N=	Z= .900 P= .925 X(I)=	N=	Z= .900 P= .900 X(I)=	N=	Z= .900 P= .875 X(I)=	N=	Z= .900 P= .850 X(I)=	N=	Z= .900 P= .800 X(I)=	N=
0	46.06	0	30.71	0	23.03	0	19.42	0	15.35	0	11.51
1	77.20	1	51.67	1	38.50	1	31.12	1	25.94	1	19.46
2	106.45	2	70.97	2	53.23	2	42.58	2	35.49	2	26.62
3	133.67	3	89.08	3	66.81	3	53.45	3	44.55	3	33.41
4	159.83	4	106.56	4	79.94	4	63.93	4	53.30	4	39.98
5	185.45	5	123.66	5	92.75	5	74.20	5	61.83	5	46.38
6	210.65	6	140.43	6	105.32	6	84.27	6	70.22	6	52.67
7	235.47	7	156.95	7	117.71	7	94.17	7	78.47	7	58.86
8	259.90	8	173.27	8	129.95	8	103.96	8	86.64	8	64.98
9	284.12	9	189.42	9	142.06	9	113.65	9	94.71	9	71.04
10	308.14	10	205.42	10	154.07	10	123.26	10	102.71	10	77.04
11	331.97	11	221.26	11	165.99	11	132.79	11	110.66	11	82.99
12	355.64	12	237.09	12	177.82	12	142.26	12	118.55	12	88.92
13	379.16	13	252.77	13	189.59	13	151.67	13	126.39	13	94.80
14	402.56	14	268.38	14	201.29	14	161.03	14	134.19	14	100.65
15	425.85	15	283.91	15	212.93	15	170.34	15	141.96	15	106.46
16	449.04	16	299.36	16	224.52	16	179.62	16	149.68	16	112.26
17	472.13	17	314.75	17	236.06	17	188.85	17	157.38	17	118.03
18	495.13	18	330.09	18	247.57	18	198.06	18	165.05	18	123.78
19	518.06	19	345.37	19	259.03	19	207.22	19	172.68	19	129.51
20	540.91	20	360.61	20	270.46	20	216.37	20	180.31	20	135.23
21	563.69	21	375.79	21	281.85	21	225.49	21	187.90	21	140.93
22	586.41	22	390.94	22	293.21	22	234.57	22	195.47	22	146.61
23	609.07	23	406.05	23	304.54	23	243.63	23	203.03	23	152.27
24	631.67	24	421.12	24	315.85	24	252.67	24	210.56	24	157.93
25	654.23	25	436.15	25	327.11	25	261.69	25	218.08	25	163.56
26	676.73	26	451.16	26	338.37	26	270.70	26	225.58	26	169.19
27	699.19	27	466.13	27	349.59	27	279.68	27	233.06	27	174.80
28	721.60	28	481.07	28	360.81	28	288.64	28	240.54	29	180.40
29	743.98	29	495.98	29	371.99	29	297.59	29	248.00	29	186.00
30	766.31	30	510.87	30	383.16	30	306.52	30	255.44	30	191.58
31	788.60	31	525.74	31	394.30	31	315.45	31	262.87	31	197.16
32	810.86	32	540.57	32	405.43	32	324.35	32	270.29	32	202.72
33	833.08	33	555.39	33	416.54	33	333.23	33	277.70	33	208.28
34	855.28	34	570.18	34	427.64	34	342.12	34	285.09	34	213.82
35	877.43	35	584.96	35	438.72	35	350.98	35	292.48	35	219.36
36	899.57	36	599.71	36	449.78	36	259.83	36	299.86	36	224.89

Z= .900 P= .750 X(I)=	N=	Z= .900 P= .700 X(I)=	N=	Z= .900 P= .650 X(I)=	N=	Z= .900 P= .600 X(I)=	N=	Z= .850 P= .990 X(I)=	N=	Z= .850 P= .980 X(I)=	N=
0	5.21	0	7.68	0	6.58	0	5.77	0	189.72	0	94.86
1	15.56	1	12.97	1	11.12	1	9.72	1	337.24	1	168.62
2	21.25	2	17.74	2	15.21	2	13.31	2	472.31	2	236.16
3	26.73	3	22.27	3	19.10	3	16.71	3	601.36	3	300.69
4	31.98	4	26.65	4	22.84	4	19.99	4	726.71	4	363.35
5	37.11	5	30.93	5	26.50	5	23.19	5	849.47	5	424.74
6	42.13	6	35.11	6	30.09	6	26.34	6	970.31	6	485.16
7	47.05	7	39.24	7	33.64	7	29.44	7	1089.66	7	544.83
8	51.95	8	43.32	8	37.13	8	32.49	8	1207.76	8	603.89
9	56.82	9	47.35	9	40.59	9	35.52	9	1324.86	9	662.45
10	61.63	10	51.36	10	44.02	10	38.52	10	1441.13	10	720.56
11	66.40	11	55.34	11	47.43	11	41.50	11	1556.63	11	778.32
12	71.14	12	59.28	12	50.80	12	44.46	12	1671.48	12	835.74
13	75.84	13	63.19	13	54.18	13	47.40	13	1785.76	13	892.88
14	80.51	14	67.10	14	57.51	14	50.32	14	1899.51	14	949.76
15	85.17	15	70.98	15	60.84	15	53.24	15	2012.83	15	1006.41
16	89.81	16	74.84	16	64.15	16	56.13	16	2125.70	16	1062.85
17	94.43	17	78.69	17	67.45	17	59.02	17	2238.21	17	1119.11
18	99.03	18	82.53	18	70.74	18	61.90	18	2350.37	18	1175.19
19	103.62	19	86.34	19	74.01	19	64.76	19	2462.20	19	1231.10
20	108.15	20	90.16	20	77.27	20	67.61	20	2573.73	20	1286.87
21	112.75	21	93.95	21	80.53	21	70.47	21	2684.99	21	1342.51
22	117.29	22	97.74	22	83.78	22	73.30	22	2796.00	22	1398.00
23	121.82	23	101.52	23	87.01	23	76.14	23	2906.77	23	1453.39
24	126.34	24	105.29	24	90.24	24	78.97	24	3017.31	24	1508.66
25	130.85	25	109.04	25	93.47	25	81.79	25	3127.64	25	1563.82
26	135.35	26	112.80	26	96.68	26	84.59	26	3237.76	26	1618.88
27	139.84	27	116.53	27	99.89	27	87.40	27	3347.70	27	1673.86
28	144.32	28	120.27	28	103.09	28	90.21	28	3457.46	28	1728.73
29	148.80	29	124.00	29	106.29	29	93.00	29	3567.06	29	1783.53
30	153.26	30	127.72	30	109.49	30	95.80	30	3676.50	30	1838.25
31	157.72	31	131.44	31	112.66	31	98.58	31	3785.77	31	1892.89
32	162.18	32	135.15	32	115.84	32	101.36	32	3894.91	32	1947.46
33	166.63	33	138.86	33	119.01	33	104.14	33	4003.92	33	2001.96
34	171.06	34	142.55	34	122.19	34	106.91	34	4112.77	34	2056.39
35	175.49	35	146.24	35	125.35	35	109.68	35	4221.52	35	2110.76
36	179.91	36	149.93	36	128.52	36	112.45	36	4330.13	36	2165.07

X(I)=	Z= .850 P= .970 N=	Z= .850 P= .960 N=	Z= .850 P= .950 N=	Z= .850 P= .925 N=	Z= .850 P= .900 N=	Z= .850 P= .875 N=
0	65.24	47.4[illegible]	37.94	25.3[illegible]	18.98	15.34
1	112.42	84.22	67.45	44.97	33.73	26.58
2	157.44	118.06	94.46	62.58	47.23	37.79
3	200.45	150.34	120.27	[illegible]	60.14	48.11
4	242.24	181.65	145.34	96.89	72.67	58.14
5	283.16	212.37	169.90	113.27	84.95	67.96
6	325.44	242.58	194.06	129.38	97.03	77.63
7	363.22	272.41	217.93	145.29	108.97	87.18
8	402.60	301.95	241.56	161.04	120.79	96.62
9	441.63	331.22	264.98	176.66	132.50	106.00
10	480.39	360.28	288.23	192.15	144.11	115.30
11	516.88	389.16	311.33	207.55	155.66	124.53
12	557.16	417.88	334.30	222.86	167.16	133.72
13	595.26	446.44	357.15	238.11	178.58	142.86
14	632.18	474.88	379.91	253.27	189.96	151.97
15	670.95	503.21	402.56	268.38	201.29	161.03
16	708.57	531.43	425.15	283.43	212.58	170.06
17	746.07	559.56	447.65	298.45	223.83	179.06
18	783.45	587.57	470.07	313.39	235.04	188.03
19	820.74	615.55	492.44	328.30	246.22	196.98
20	857.92	643.44	514.75	343.17	257.38	205.90
21	895.01	671.25	537.00	358.01	268.51	214.80
22	932.00	699.00	559.21	372.81	279.60	223.68
23	968.92	726.69	581.35	387.57	290.68	232.55
24	1005.77	754.32	603.47	402.31	301.73	241.39
25	1042.55	781.91	625.53	417.02	312.77	250.21
26	1079.26	809.44	647.56	431.71	323.78	259.03
27	1115.90	836.93	669.55	446.37	334.78	267.83
28	1152.49	864.37	691.50	461.00	345.75	276.60
29	1189.03	891.77	713.42	475.61	356.71	285.36
30	1225.51	919.13	735.30	490.21	367.66	294.13
31	1261.93	946.45	757.16	504.78	378.58	302.86
32	1298.31	973.73	778.98	519.33	389.50	311.59
33	1334.64	1000.99	800.75	533.86	400.40	320.32
34	1370.93	1028.20	822.55	548.37	411.28	329.03
35	1407.17	1055.38	844.31	562.87	422.16	337.73
36	1443.38	1082.53	866.03	577.35	433.02	346.41

X(I)=	Z= .850 P= .850 N=	Z= .850 P= .800 N=	Z= .850 P= .750 N=	Z= .850 P= .700 N=	Z= .850 P= .650 N=	Z= .850 P= .600 N=
0	12.65	9.49	7.59	6.32	5.42	4.75
1	22.48	16.86	13.49	11.24	9.64	8.44
2	31.49	23.62	18.89	15.75	13.50	11.81
3	40.09	30.07	24.06	20.05	17.19	15.04
4	48.45	36.34	29.08	24.23	20.77	18.18
5	56.63	42.48	33.98	28.32	24.27	21.24
6	64.69	48.52	38.82	32.35	27.73	24.26
7	72.65	54.49	43.59	36.33	31.14	27.24
8	80.52	60.40	48.32	40.27	34.52	30.20
9	88.33	66.25	53.00	44.17	37.86	33.12
10	96.08	72.06	57.65	48.04	41.18	36.03
11	103.78	77.83	62.27	51.89	44.48	38.92
12	111.44	83.58	66.87	55.72	47.76	41.79
13	119.06	89.29	71.44	59.53	51.03	44.65
14	126.64	94.98	75.99	63.32	54.28	47.49
15	134.19	100.65	80.52	67.10	57.51	50.33
16	141.72	106.29	85.04	70.86	60.74	53.15
17	149.21	111.92	89.53	74.61	63.96	55.96
18	156.70	117.52	94.02	78.35	67.16	58.76
19	164.15	123.12	98.50	82.08	70.35	61.56
20	171.58	128.69	102.95	85.80	73.54	64.35
21	179.01	134.26	107.40	89.50	76.72	67.13
22	186.41	139.80	111.85	93.21	79.89	69.91
23	193.79	145.34	116.28	96.90	83.06	72.67
24	201.15	150.87	120.70	100.58	86.21	75.44
25	208.51	156.38	125.11	104.26	89.37	78.20
26	215.86	161.89	129.52	107.93	92.51	80.95
27	223.19	167.39	133.92	111.60	95.65	83.70
28	230.50	172.88	138.31	115.26	98.79	86.44
29	237.81	178.36	142.69	118.91	101.92	89.18
30	245.10	183.83	147.06	122.56	105.05	91.91
31	252.39	189.29	151.44	126.20	108.17	94.65
32	259.66	194.75	155.81	129.83	111.29	97.39
33	266.94	200.20	160.16	133.47	114.40	100.10
34	274.19	205.65	164.52	137.10	117.51	102.82
35	281.44	211.08	168.88	140.72	120.62	105.54
36	288.68	216.51	173.21	144.34	123.73	108.26

X(I)=	Z= .800 P= .990 N=	Z= .800 P= .980 N=	Z= .800 P= .970 N=	Z= .800 P= .960 N=	Z= .800 P= .950 N=	Z= .800 P= .925 N=
0	160.95	80.48	53.65	40.25	32.19	21.46
1	299.44	149.72	99.82	74.85	55.89	39.92
2	427.91	213.96	142.64	106.98	85.58	57.06
3	551.5[illegible]	275.76	183.84	137.89	110.30	73.54
4	672.11	336.05	224.04	168.03	134.43	89.62
5	790.61	395.31	263.54	197.65	158.12	105.42
6	907.55	453.77	302.52	226.89	181.51	121.01
7	1023.26	511.64	341.09	255.61	204.66	136.44
8	1137.96	568.99	379.33	284.50	227.60	151.74
9	1251.88	625.94	417.30	312.97	250.38	166.92
10	1365.08	682.54	455.03	341.27	273.01	182.02
11	1477.67	738.83	492.56	369.42	295.54	197.03
12	1589.73	794.87	529.91	397.44	317.95	211.97
13	1701.3[illegible]	850.67	567.12	425.34	340.27	226.85
14	1812.51	906.27	604.17	453.14	362.51	241.67
15	1923.32	961.67	641.11	480.84	384.67	256.45
16	2033.79	1016.50	677.94	508.45	406.76	271.18
17	2143.95	1071.97	714.66	535.99	428.79	285.86
18	2253.82	1126.91	751.28	563.46	450.77	300.51
19	2363.44	1181.72	787.81	590.86	472.69	315.13
20	2472.80	1236.40	824.27	618.21	494.57	329.71
21	2581.96	1290.98	860.65	645.49	516.39	344.26
22	2690.69	1345.45	896.97	672.73	538.19	358.79
23	2799.64	1399.82	933.21	699.92	559.93	373.29
24	2908.20	1454.10	969.41	727.05	581.65	387.76
25	3016.58	1508.30	1005.53	754.15	603.32	402.22
26	3124.61	1562.41	1041.60	781.21	624.97	416.65
27	3232.69	1616.45	1077.63	808.22	646.58	431.06
28	3340.81	1670.41	1113.61	835.20	668.17	445.45
29	3446.61	1724.31	1149.54	862.16	689.72	459.82
30	3556.28	1778.13	1185.43	889.07	711.26	474.17
31	3663.81	1831.91	1221.28	915.96	732.77	488.51
32	3771.23	1885.62	1257.08	942.81	754.25	502.83
33	3878.54	1939.28	1292.85	969.64	775.71	517.14
34	3985.74	1992.88	1328.59	996.44	797.15	531.44
35	4092.84	2046.43	1364.29	1023.21	818.57	545.72
36	4199.84	2099.93	1399.95	1049.96	839.97	559.98

X(I)=	Z= .800 P= .900 N=	Z= .800 P= .875 N=	Z= .800 P= .850 N=	Z= .800 P= .800 N=	Z= .800 P= .750 N=	Z= .800 P= .700 N=
0	16.10	12.88	10.74	8.06	6.49	5.37
1	29.95	23.96	19.57	14.57	11.98	9.95
2	42.80	34.24	28.53	21.40	17.12	14.27
3	55.16	44.12	36.77	27.58	22.07	18.39
4	67.21	53.78	44.81	33.61	26.89	22.41
5	79.06	63.26	52.71	39.54	31.63	26.36
6	90.76	72.60	60.50	45.38	36.31	30.26
7	102.33	81.87	68.22	51.17	40.93	34.12
8	113.81	91.05	75.87	56.90	45.52	37.94
9	125.20	100.16	83.46	62.60	50.08	41.73
10	136.51	109.21	91.01	68.26	54.61	45.51
11	147.77	118.22	98.51	73.89	59.12	49.26
12	158.97	127.18	105.99	79.49	63.59	52.99
13	170.14	136.11	113.42	85.07	68.05	56.72
14	181.26	145.01	120.84	90.63	72.51	60.42
15	192.34	153.87	128.22	96.17	76.94	64.12
16	203.38	162.71	135.59	101.70	81.36	67.80
17	214.40	171.52	142.93	107.20	85.77	71.47
18	225.35	180.31	150.26	112.70	90.15	75.13
19	236.34	189.08	157.56	118.17	94.54	78.79
20	247.29	197.83	164.85	123.65	98.92	82.43
21	258.20	206.56	172.14	129.10	103.28	86.07
22	269.05	215.28	179.39	134.55	107.64	89.71
23	279.97	223.97	186.64	139.98	111.99	93.33
24	290.82	232.66	193.88	145.41	116.33	96.94
25	301.67	241.33	201.11	150.84	120.67	100.56
26	312.49	249.99	208.33	156.24	124.99	104.17
27	323.29	258.64	215.54	161.65	129.32	107.77
28	334.09	267.27	222.72	167.04	133.63	111.36
29	344.86	275.89	229.91	172.44	137.95	114.96
30	355.63	284.50	237.05	177.82	142.25	118.55
31	366.39	293.11	244.26	183.19	146.56	122.13
32	377.13	301.70	251.42	188.57	150.86	125.71
33	387.86	310.29	258.58	193.94	155.14	129.29
34	398.58	318.87	265.72	199.29	159.43	132.86
35	409.28	327.45	272.87	204.65	163.72	136.43
36	419.98	[illegible]	280.00	210.00	168.00	140.00

Z= .800 P= .600				Z= .800 P= .650			
X(I)=	0	N=	4.03	X(I)=	0	N=	4.61
X(I)=	1	N=	7.49	X(I)=	1	N=	8.56
X(I)=	2	N=	10.70	X(I)=	2	N=	12.23
X(I)=	3	N=	13.90	X(I)=	3	N=	15.76
X(I)=	4	N=	16.81	X(I)=	4	N=	19.21
X(I)=	5	N=	19.77	X(I)=	5	N=	22.55
X(I)=	6	N=	22.69	X(I)=	6	N=	25.94
X(I)=	7	N=	25.55	X(I)=	7	N=	29.24
X(I)=	8	N=	28.45	X(I)=	8	N=	32.52
X(I)=	9	N=	31.30	X(I)=	9	N=	35.77
X(I)=	10	N=	34.14	X(I)=	10	N=	39.01
X(I)=	11	N=	36.95	X(I)=	11	N=	42.22
X(I)=	12	N=	39.75	X(I)=	12	N=	45.43
X(I)=	13	N=	42.53	X(I)=	13	N=	48.62
X(I)=	14	N=	45.32	X(I)=	14	N=	51.80
X(I)=	15	N=	48.09	X(I)=	15	N=	54.96
X(I)=	16	N=	50.85	X(I)=	16	N=	58.11
X(I)=	17	N=	53.61	X(I)=	17	N=	61.26
X(I)=	18	N=	56.35	X(I)=	18	N=	64.40
X(I)=	19	N=	59.09	X(I)=	19	N=	67.53
X(I)=	20	N=	61.82	X(I)=	20	N=	70.66
X(I)=	21	N=	64.55	X(I)=	21	N=	73.77
X(I)=	22	N=	67.28	X(I)=	22	N=	76.89
X(I)=	23	N=	70.00	X(I)=	23	N=	80.00
X(I)=	24	N=	72.71	X(I)=	24	N=	83.09
X(I)=	25	N=	75.42	X(I)=	25	N=	86.20
X(I)=	26	N=	78.12	X(I)=	26	N=	89.29
X(I)=	27	N=	80.83	X(I)=	27	N=	92.37
X(I)=	28	N=	83.53	X(I)=	28	N=	95.45
X(I)=	29	N=	86.22	X(I)=	29	N=	98.54
X(I)=	30	N=	88.91	X(I)=	30	N=	101.62
X(I)=	31	N=	91.60	X(I)=	31	N=	104.69
X(I)=	32	N=	94.28	X(I)=	32	N=	107.76
X(I)=	33	N=	96.96	X(I)=	33	N=	110.82
X(I)=	34	N=	99.64	X(I)=	34	N=	113.88
X(I)=	35	N=	102.32	X(I)=	35	N=	116.94
X(I)=	36	N=	105.00	X(I)=	36	N=	120.00